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If prior-art artificial lard is excluded as an anticipation of the patented product, Kream Krisp should be excluded as an infringement. If the patent is broadly construed to include Kream Krisp as an infringement, it includes equally the prior-art artificial lard, and is invalid.

The patent, however, distinguishes the product thereof in its composition and properties from prior art artificial lard, and emphasizes the close resemblance of the product, in its composition and properties, with hog lard. The patent points out why a product which is like lard in chemical composition (i.e., high in olein, which is the stable glyceride, and low in linolin, the glyceride to which rancidity is said to be due) is desirable. Kream Krisp is not like lard in its chemical composition, but has a chemical composition extremely remote therefrom, and is practically identical with the prior-art artificial lard from which the patented product is distinguished.

The Court of Appeals disregarded the composition and properties of the patented product and of Kream Krisp, and found infringement solely because Kream Krisp is produced by a *process* of hydrogenation, while at the same time holding differences in *process* to be immaterial.

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Petitioner's process operates in accordance with a different law. It is continuous, and the reaction is instantaneous, but not selective. Some of the linolin is changed to stearin, but only a little to olein. Kream Krisp, therefore, is not high in olein, and low in linolin, as is the patented product .. 60

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By amendment, the patentee inserted a description of his product as chemically "lard-like," i. e., high in olein and low in linolin, and pointed out why such "lard-like" composition was important and desirable.

These amendments and limitations were inserted to escape repeated rejection by the Examiner and to secure the grant of the patent, and the patentee should be held bound by the limitations thus introduced.

As so limited, Kream Krisp does not infringe, because it is not chemically "lard-like."

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The patented product is artificial lard, made by hardening cottonseed oil, and does not differ from prior-art artificial lard except in its *process* of production. It is, therefore, an old product.

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The patented product is therefore old and unpatentable and the patentee is not even the inventor of the process of producing it.

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Fats and oils are mixtures of old and well-known liquid and solid glycerides, linolin, olein and stearin. The consistency of an oil or fat depends on the proportions of these glycerides.

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In the
Supreme Court of the United States.

OCTOBER TERM, 1919.

No. 344.

BERLIN MILLS COMPANY, *Petitioner,* *vs.* THE PROCTER & GAMBLE COMPANY, *Respondent.*	On Writ of Certiorari.

BRIEF FOR THE PETITIONER.

MAY IT PLEASE THE COURT:

This is a patent case.

The Respondent herein, the Procter & Gamble Company, an Ohio corporation, brought suit in the Southern District of New York, for the infringement of claims 1 and 2 of United States Letters Patent No. 1,135,351, dated April 13, 1915, granted to The Procter & Gamble Company as assignee of John J. Burchenal, for Food Product, against the Petitioner herein, Berlin Mills Company, a Maine corporation. After final hearing on pleadings and proofs, a decree was entered in the District Court, decreeing the patent to be void for lack of invention, and the claims of the patent not to be infringed.

On appeal, the Court of Appeals for the Second Circuit, one member dissenting, reversed the decree below, and remanded the case with instructions to issue a decree that the patent is valid and the claims thereof are infringed by Petitioner's product.

This case is now before this Court, by writ of certiorari issued to the Court of Appeals for the Second Circuit.

The Burchenal patent in suit is for an artificial lard defined in the following claims:

> "1. A homogeneous lard-like food product consisting of an incompletely hydrogenized vegetable oil.
>
> "2. A homogeneous lard-like food product consisting of incompletely hydrogenized cottonseed oil."

As will be shown hereinafter, a homogeneous lardlike food product or artificial or imitation lard, is old as produced:—

(a) by hardening cottonseed oil to a semi-solid consistency by mechanically mixing therewith melted hard animal or vegetable fat, and

(b) by hardening cottonseed oil to a semi-solid consistency by mechanically mixing therewith hard hydrogenized cottonseed oil, (i. e., oil previously hardened by a process of hydrogenation).

The artificial lard or "homogeneous lard-like food product" of the patent in suit is produced by subjecting cottonseed oil to a process of hydrogenation, and thereby hardening it until it has a semi-solid consistency.

Oils and fats of animal and vegetable origin, including lard, oleo-stearin, cottonseed oil, prior-art artificial lard, and the artificial lard of the

patent in suit, all consist of *mixtures* of solid and liquid glycerides—stearin, olein and linolin—and the physical consistency of the individual product depends upon the proportions in which these glycerides are in admixture. The solid or "saturated" glycerides—stearin and palmatin—are grouped under the name "stearin." The liquid glycerides are olein and linolin, of which linolin has the lower melting point. These well-known glycerides—stearin, olein and linolin—differ in the number of hydrogen atoms which they contain, and by chemically adding hydrogen to linolin, it may be converted to olein or to stearin, according to the number of atoms of added hydrogen. Thus cottonseed oil, which is a liquid, may be converted to a semi-solid product or artificial lard, by increasing the proportion of its solid glycerides, in the two different ways previously indicated, namely:

(a) by adding the solid glycerides in the form of a hard animal or vegetable fat; or

(b) by chemically adding hydrogen to its liquid glycerides and producing the solid glycerides *in situ* in the oil.

The first of these ways of increasing the consistency of a vegetable oil (and particularly cottonseed oil) has been in use for many years in making a product of the consistency of lard.

The second way of increasing the consistency of a vegetable oil by hydrogenation is of relatively modern origin, having been given to the world in a British patent to Normann (No. 1515 of 1903). By its practice, a product of any desired consistency may be produced, the consistency depending upon the amount of hydrogen added.

When by the practice of the second method, a

product of the consistency of lard is produced, that product is the same as the product of the first method, in that both are mixtures of solid and liquid glycerides, and both are "incompletely hydrogenized" because both are still capable of having hydrogen added thereto. Each is a homogeneous lard-like food product consisting of cottonseed oil hardened to a semi-solid consistency. Both products have the same capabilities of use for cooking and edible purposes.

These products, except for the process of manufacture, are held by the Court of Appeals to be substantially the same thing, and the differences between them to be unimportant from the standpoint of the cook who uses them and the chemist who analyzes them. The Court, nevertheless, assumed to hold that because the product of the patent in suit is brought to the consistency of lard by the second method instead of the first, it is patentable for that reason, despite the identity of the two products.

The petitioner's product "Kream Krisp" is produced by hardening, by hydrogenation, a portion of the cottonseed oil of which it is made, and it is identical, as a product, with prior-art artificial lard. Specifically, it consists of a mixture of cottonseed oil and hard fat. That is, like lard and prior-art artificial lard, it is a mixture of old and well-known solid and liquid glycerides, and has the same use as those products and is identical with prior-art artificial lard.

The Question Involved.

The main question of law presented by this case is whether the claim of a patent for an old product is sustainable as a claim for that product made by a particular process.

A subsidiary question is whether such a claim is infringed by a product made by a hydrogenating process specifically different from that described in the patent, and unlike the product of the patent according to the various tests prescribed in the patent as identifying the patented product.

The Prior Decisions.

The District Court, Hon. A. N. Hand, held the patent in suit to be void for lack of invention, and not to be infringed by the product of Petitioner (Rec., pp. 759-765). 250 Fed., 747.

The Circuit Court of Appeals, Hon. H. G. Ward dissenting, reversed the decree of the District Court, and held the Burchenal patent in suit to be valid and infringed (Rec., pp. 773, et seq.). (256 Fed., 23.)

In its majority decision, the Court of Appeals, speaking by Hon. C. M. Hough, in referring to the defense of invalidity set up by the defendant, said:

> "The third objection to invention is substantially this:-the merit or value of what Burchenal claims and what this Plaintiff makes and sells, is that it looks like lard, acts like lard and can be used for the purposes of lard without offending the conservatism of chefs, housewives and maid-servants. But before Burchenal many imitation lards were made by mechanically mixing hard animal fats and cottonseed oil in varying proportions and some of these mixtures show on analysis substantially the same chemical characteristics as are shown by Burchenal's chemically produced 'homogeneous semi-solid'. Therefore it is said that to make the same thing as had been made by earlier lard imitators but in a different way, cannot warrant a patent

upon the resulting thing or product, whatever may be true in respect of the process by which that product is reached. This is as much as to say (c) that the Burchenal article when completed and ready for use must be old, because other men had earlier arrived at the same chemical result by other paths." (P. 774.)

* * * * * * * * * *

"It may be assumed as true that by the mixture of cottonseed oil and animal stearin a substance can be produced which for practical purposes is the same thing as Burchenal's chemically changed cottonseed oil; but one is a mixture and the other is not, and assuming the difference to be unimportant from the standpoint of either chemist or cook, it is a vital difference from that of the law." (P. 775.)

In the dissenting opinion, Ward C. J., said:

"I think the District Judge was right in holding the patent void for lack of invention. It was well known that a vegetable oil could be changed chemically into a hard fat by hydrogenation and of course that at some stage of the process before complete hydrogenation it would be a homogeneous semi-solid. It was also known that the process would not affect the edibility of the product. The product at all stages of the process was therefore old and open to the public for any use of which it was capable." (P. 779.)

A petition for rehearing was filed (pp. 780-801) by the defendant-petitioner, and was denied. In the decision denying a rehearing, Hon. C. M. Hough (Hon. H. W. Rogers concurring and Hon. H. G. Ward not voting) said:

"Our decision is and has been based on a firm conviction that what is practicaly lard, consisting solely of one vegetable oil in a

> state of arrested hydrogenation, is a new thing in the sense of the patent law, almost as new as a synthetic egg, evolved from vegetable albumen by chemical treatment. The results of such evolutionary treatment are by their genesis so novel that analysis of constituents is immaterial. Patentable novelty is not in their parts, as revealed by quantitative or qualitative analysis, but in a practical functional identity between animal products, and a vegetable product as chemically changed." (P. 803.) (256 Fed., 30.)

Whereas the District Court and Judge Ward in his dissenting opinion held the patent to be void for lack of invention, the majority decision of the Court of Appeals held in effect that, while the patented product is indistinguishable by chemist or cook from products of the prior art, yet, *because it is produced by a particular process*,—"arrested hydrogenation,"—it is a new and patentable product.

The Prior Art.

The patent in suit relates generally to a semi-solid food fat or artificial lard consisting of a mixture of the glycerides—stearin, olein and linolin. The object of the invention, as stated in the patent, is to produce "a homogeneous white or yellowish semi-solid closely simulating lard."

The specification and claims of the patent, as well as the decisions of the Courts below, employ a number of technical terms such as "glycerides" or "glycerides of the fatty acids", "saturated" and "unsaturated" glycerides, "hydrogenation", "iodine value", etc., which are employed in food chemistry, and these are all defined and explained in the record.

While we believe that the decision of the Court

of Appeals, as contained within its four corners presents on its face serious and reversible errors of law, not requiring a consideration of the chemistry of fats and oils, yet, since that decision as well as the dissenting opinion of Judge Ward, make reference to such matters, as well as to the art of hydrogenation and its history, etc., we present, with an apology, an appendix, in which are discussed, the nature and chemistry of oils and fats, the common methods of identifying them, the art of hydrogenation and its history, and the patent in suit as originally presented and as finally granted.

Hardening oils and fats.

By artificially changing the proportions of its glycerides (stearin, olein and linolin) cotton-seed oil may be converted into an artificial lard, that is, to a semi-solid product having the consistency, characteristics and attributes of lard, so that it may be employed as lard for all the purposes for which lard is used. This change may be accomplished either mechanically or chemically. That is to say, the proportion of solid glycerides may be increased by *mechanically* mixing melted hard fat with the natural oil, or else by an old *chemical* process converting some of the liquid glycerides of the oil to solid glycerides, until the fat has acquired the desired semi-solid consistency. This chemical process of *hardening* an oil or fat is technically termed "hydrogenation", and is one in which hydrogen is caused to combine with the unsaturated glycerides to change them to harder glycerides of higher saturation, thereby increasing the proportions of glycerides of higher saturation in the product and changing or decreasing the proportion of the unsaturated glycerides, and thus securing the same

result as though the proportions of the saturated and unsaturated glycerides were changed by mechanically adding saturated glycerides to the oil.

A hard fat is solid because it contains a large percentage of solid or saturated glycerides, and thus it contains a greater amount of hydrogen, than a semi-solid or liquid fat which contains a large proportion of liquid or unsaturated glycerides. But such a liquid may be increased in consistency, by increasing the amount of hydrogen in the product. This may be accomplished by adding solid or saturated glycerides; that is, glycerides containing a greater amount of hydrogen, or by chemically adding hydrogen to the unsaturated glycerides in the oil to produce glycerides of higher saturation *in situ*. In each case there is in the final product a greater proportion of solid glycerides and consequently a greater proportion of hydrogen than was in the original oil. As said by Mr. Morrison, Respondent's chemical superintendent and expert, in the one case solid fats are added to the oil, and "in the hydrogenated products * * * we increase the solids at the expense of the liquids. So that in the ultimate analysis, however, the ratio between the solids and the liquids is pretty nearly the same". (Rec., p. 946.)

In the appendix under the title "Process of Hardening Oils by Hydrogenation" we give a brief explanation of the chemical reaction, and invite the Court's attention thereto.

By the process of hydrogenation or hardening by adding on hydrogen, an oil, which consists of a mixture of unsaturated and saturated glycerides, may be hardened, or changed from a liquid consistency to a semi-solid consistency, by con-

verting some of the liquid glycerides of the oil to solid glycerides and thus changing the proportions in which the solid and liquid glycerides were originally contained and mixed in the oil; or on the other hand an oil may be hardened or changed from a liquid consistency to a semi-solid consistency, by mechanically mixing a melted hard fat with the oil; and in each case a product of semi-solid consistency will be produced which is capable of being converted by well known processes into lard, or artificial lard, and which consists of a mixture of the glycerides linolin, olein and stearin.

The process of hydrogenizing oil, or hardening oil by the chemical addition of hydrogen, was not the invention of the patentee Burchenal but was disclosed to the world in the British Patent to Normann, No. 1515 of 1903 (Rec. p. 585), and in other patents and publications discussed at length in the appendix (pp. 101 to 108). The process was brought to this country in 1907 and was disclosed and taught to Burchenal by E. C. Kayser, who had practiced the process in England, and who brought with him samples of incompletely hydrogenized cottonseed oil.

There is no pretense therefore in the present case that the patentee, Burchenal, invented either the process of hardening oils by mechanically mixing hard fats therewith or hardening oils by the chemical process of hydrogenation, since both of these processes were known and practiced before his advent in the field.

Animal and vegetable oils and fats have been used for edible or culinary purposes from a time so remote that it is lost in the annals of history. Among the vegetable food oils thus used were cottonseed oil, olive oil, cocoanut oil, almond oil,

etc., and among the animal fats were the fat of hogs, sheep and cattle. These have been often used in their natural state. For instance, in South America beef tallow, which is a solid, is used for all cooking purposes, and in Italy olive oil is employed for the purpose; whereas, in the United States there are used principally for culinary purposes lard and lard substitutes, which are semi-solid (Dr. Bacon, XQs. 196-198, page 428).

Lard.

Lard itself is not a naturally occurring product. It is extracted from the fatty tissues of the hog by heating them in a kettle until the fats are separated from the tissues which hold them. The extracted fat, which is then molten and liquid, is drawn from the kettle, and is bleached and clarified. It is then chilled to a semi-solid consistency on refrigerated lard rolls, and is packaged (Richardson, Qs 16-17; page 346). As the product is delivered from the refigerated rolls, it is whipped with pickers, by which air is incorporated in the mass to whiten and stiffen it, all in accordance with usual practice.

Lard, as thus produced, as indicated by its low "iodine number", is still capable of taking on or absorbing hydrogen, and thus is by the processes of nature "incompletely hydrogenized," or has the attribute of an incompletely hydrogenized product. It can be converted by the addition of hydrogen to a brittle white solid.[1]

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[1] Thus Paal and Roth, starting with lard having an iodine value of 52, added hydrogen thereto by a catalytic reaction, and, by *completely* hydrogenizing it, produced "a hard pulverizable white nearly tasteless tallow which melted at 56-60° C., and showed an iodine number of 0° (Rec., pp. 615, 616).

Lard, like cottonseed oil, consists of a mixture of solid and liquid glycerides (stearin, olein and linolin) and it contains a sufficient proportion of stearin to cause it to congeal to a semi-solid consistency at ordinary temperature.

Artificial Lard.

For many years artificial lard made by hardening cottonseed oil has been a standard product on the market. Such a product is described in the British patent to Joseph Sears, of Chicago, Illinois, No. 10,783, of 1887 (Rec., p. 709). The patentee states that:

> "Heretofore cottonseed oil has been used largely in the manufacture of refined lard and it has also been used alone as a substitute for lard."

He describes a compound consisting of cottonseed oil hardened to the consistency of lard by the addition of a sufficient quantity of a hard fat, i. e., an animal or vegetable stearin. "The stearin of beef suet is preferred but that of other wholesome fat, either animal *or vegetable*, may be used." The hard fat is added in the proportions of 1 part of hard fat to 3 or 4 parts of cottonseed oil, the hard fat and the oil being heated to a temperature above the melting point of the fat, and the two components being thus mixed or blended together. The incorporation of the melted hard fat in the cottonseed oil changes the chemical composition of the oil by increasing the percentage of the saturated glycerides thereof and imparts thereto the desired semi-solid consistency. The resulting product is a mixture of olein, linolin and stearin, the stearin being in a sufficient proportion to cause the product to con-

geal to a semi-solid consistency at ordinary temperatures. This was common knowledge as far back as 1887, as manifested by the Sears patent.

The Sears patent specification makes no pretense as to the novelty of such a product, even at that time, but points out that Sears' contribution to the art was to retain a yellowish or cream-like tint in the product by using *unbleached* oil, in contradistinction to the white product made previously by the use of *bleached* cottonseed oil.

Jewell Compound Lard.

The Record also shows that for many years, long prior to the patent in suit, there have been on the market in great quantities as staple culinary fats, artificial lard or lard substitutes consisting of cottonseed oil hardened to a homogeneous white or yellowish semi-solid by the addition of stiffening agents, *i. e.*, hard fats such as oleo stearin, thereby changing the chemical composition or proportions of the glycerides of the cottonseed oil. Depending upon the climate or the season in which such products are used, it has long been the custom to vary the proportions of the cottonseed oil and hard fat thereof, by adding a greater proportion of the hard fat to increase the stiffness or raise the melting point of the product for use in warm climates, or by adding a greater proportion of the oil to lower the melting point and decrease the stiffness of the product for use in winter time or for cold climates (Richardson, Q30, p. 347; McCaw, Qs. 239-240, p. 180 and Q227, p. 179).

As indicating the extent to which such artificial lard has been manufactured and sold, it is of record that Swift and Company alone manu-

facture and sell annually between 250,000,000 and 500,000,000 pounds thereof under the trade name of "Jewel" compound (Qs. 44-50, p. 349).

In hardening cottonseed oil by the use of a hard fat, and thus changing the proportions of the saturated and unsaturated glycerides thereof, it has been common practice, as stated, to employ the hard fat termed "oleo stearin," which, like lard, is extracted from an animal fat. Oleo stearin is extracted from the fatty tissues of beef by rendering them in kettles, and after the fat has separated from the tissues, it is allowed to harden and crystallize. The fat is then placed in a press, and the softer portions or oil is squeezed out, the hard or solid portion remaining being termed "oleo stearin" (Richardson, Qs. 34, 35, p. 348; Q13, p. 345).

Flake White.

Also as a part of the prior art, antecedent in date to the alleged invention of the patent in suit, there was on the market an artificial lard manufactured by the Respondent, under the trade-name "Flake White", and manufactured solely from cottonseed oil. The process, by which this product was produced, was to harden cottonseed oil to a white or yellowish semi-solid, by melting and blending therewith cottonseed oil which had been hydrogenized to a hard state approximating that of oleo stearin. That is, instead of using oleo stearin, a hard fat produced by hydrogenizing cottonseed oil, was substituted therefor and mixed or blended with cottonseed oil. The process of hydrogenation was employed for hardening a portion (i.e., 10% to 15%) of the whole body of oil of which the product was made. It is just as though 15 gallons of oil were drawn from a tank

containing 100 gallons, and, after being hydrogenated to a hard state, were, while melted, poured back again into the original tank and mixed or blended with the contents thereof.

Such a product, on being passed over lard rolls and whipped with the pickers, is an artificial lard having the consistency of lard made from the fat of hogs.

In the brief of the Respondent in opposition to the petition for the writ of certiorari, this material is conceded to be a part of the prior art, to wit: "A mixture of from eighty-five to ninety per cent. of (1) [cottonseed oil] with from ten to fifteen per cent. of (2) [completely converted cottonseed oil—a hard product]". (P. 10.)

From this brief resumé, it appears that prior to the patent in suit, there were, as a part of the prior art, and open for public use, (a) lard as produced from the extracted fat of the hog, (b) lard produced artificially by hardening cottonseed oil with oleostearin or with hydrogenized oil. It further appears that the process of hydrogenizing oils was open to the public, and that anyone in this country had the right to practice that process and to put the products resulting therefrom to the accustomed uses of oils and fats —including their use for edible and culinary purposes.

All of the foregoing products, thus briefly described, are compositions of matter and consist only in *mixtures* of glycerides *i.e.,* (a) saturated glycerides, grouped as stearin, (b) olein, and (c) lesser saturated glycerides, grouped as linolin. They are all semi-solid in consistency and all have approximately the same melting points. They are all capable of being further or

completely hydrogenized and thus have the attribute of being "incompletely hydrogenized." They are all "white or yellowish semi-solids" and are physically homogeneous. They are all used for the same culinary purposes, and are what a "plain man would call lard." In all of these products, the physical homogeneous consistency is due to the treatment of the melted fat with refrigerated lard rolls and to the whipping of the refrigerated fat with pickers by which they are given the smooth white appearance. The design and end of their production are the same, no matter how or from what they are produced. Their uses are identical.

The Patent in Suit.

The Burchenal patent, No. 1,135,351 (Rec., p. 502), describes a food product, to wit "a homogeneous white or yellowish semi-solid closely simulating lard."

The patentee explains that cottonseed oil consists of a mixture of the well-known glycerides, linolin, olein and stearin (saturated glycerides) (lines 18-21, p. 2, Rec., opposite p. 503), and states that it is his object to change the proportions of these glycerides in the cottonseed oil to obtain his lard-like product (lines 65-74, p. 1). And he states that his resulting product contains these same glycerides, olein, stearin and linolin, but in such proportions that it has a semi-solid consistency. There is no pretense in the patent that the product is anything more than a mixture of these glycerides. Indeed, it states the percentages in which these glycerides are present in admixture—namely 20% to 25% stearin, 65% to 75% olein and 5% to 10% linolin (lines 10-14, p. 2).

Thus the final product, like lard and like the prior-art artificial lard, consists, as they do, of these several glycerides mixed in such proportions that it is semi-solid, or of lard-like consistency. The patent explains further that instead of changing the relative proportions of the glycerides of the cottonseed oil by adding hard fats thereto, it accomplishes the result by producing solid glycerides *in situ*, and thus increasing the percentage of solid glycerides in the oil.

The patent specification proceeds to describe the *process*, by which the patented product is produced, as follows:

> "In manufacturing this product, cottonseed or other vegetable oil is caused to chemically absorb a limited amount of hydrogen by reacting on the oil with hydrogen in the presence of a catalytic agent and at an elevated temperature. The oil is preferably agitated in a closed vessel in the presence of an atmosphere of compressed hydrogen, a catalyzer of finely-divided nickel carried by kieselguhr being maintained in suspension in the oil and its temperature being raised to about 155° C." (Rec., p. 502, lines 75-86.)

The process thus described is the well known *batch* process of hardening cottonseed and other oils by hydrogenation, and is conceded by the patentee not to have been invented by him (Burchenal, Qs. 756-758, pp. 67, 68).

It had been previously invented and patented by Wilhelm Normann (British patent No. 1515 of 1903, Rec., p. 584), and, after being practiced in England, was brought to this country and disclosed in all its details to Burchenal by Edwin Cuno Kayser as is shown more in detail in the Appendix (page 108).

The result of this batch process is merely to

change the proportions of the several glycerides as they existed in admixture in the oil, so that the product, on cooling, is a semi-solid artificial lard. In the prior-art artificial lard, likewise, the proportions of the glycerides of the oil are changed by the addition of hard fat and the oil is thereby hardened to a semi-solid product.

The patent is clearly *not* for a *process* of producing artificial lard, or a process of hydrogenizing oils, for the patent emphatically states that that which is patented or proposed to be patented is the *product*. The patent states that "this invention is a food product" (line 9), and the two claims in suit specify, not a process, but "a * * * food product." The patent, therefore, stands or falls with the novelty of the *product* which it describes.

Obviously it it wholly immaterial by what *name* the product of the patent is characterized in the claim. To call the product "incompletely hydrogenized oil" does not make it *per se* a new product any more than calling water "hydrogenized oxygen" makes water a new product. In other words, *if the thing itself is not new,* under well established doctrines of this court, as will be pointed out in a subsequent section of this brief, *it is wholly immaterial from what materials the product may be derived or the process by which it is produced, or the name by which it is called,* for it must be fundamental law as well as common sense that a thing, which is not *new* cannot be patented. Again, if the product is old, a claim therefor is invalid quite irrespective of the phraseology with which the claim is clothed.

The two claims in suit refer to the product of the patent as "a homogeneous lard-like food pro-

duct consisting of an incompletely hydrogenized vegetable (cottonseed) oil", and, although the claims refer to the process of hydrogenation by which the product is produced, the *novelty* of the *product* itself is in question and not the process by which that product is produced

It is in respect of the artificial lards made by hardening cottonseed oil with oleo stearin that the Court of Appeals in the majority decision said:

> "It may be assumed as true that by the mixture of cottonseed oil and animal stearin a substance can be produced which for practical purposes *is the same thing as Burchenal's chemically changed cottonseed oil:* but one is a mixture and the other is not, and *assuming the difference to be unimportant from the standpoint of either chemist or cook,* it is a vital difference from that of the law." (P. 775.) (Italics ours.)

The fundamental error which permeates this ruling is that the Court did not compare the *products* as *things,* but had in mind only the *process* of production. Both products *are mixtures.* The patent itself describes the proportions of stearin, olein and linolin present in the patented product, and assumes them to be in admixture, as indeed they are. Claims 5, 6 and 7 of the patent specify the product as "composed of glycerides of saturated and unsaturated acids", to wit, a mixture of stearin, olein and linolin.

The prior art artificial lards are likewise composed of mixtures of saturated and unsaturated glycerides—stearin, olein and linolin.

So far as all of these *products* are concerned, it is immaterial by what process the glycerides are brought together or their proportions are changed, whether by mechanical means or by

chemical means, for in the end, they are mixtures—mechanical mixtures and remain so. The Court, however, was attempting to differentiate the products, not by their composition, characteristics and functions, but solely by whether they were produced by a mechanical *process* of mixing or by a chemical *process* of hydrogenation.

Since hydrogen is added to or combined chemically with only the acid radicals or molecules of the linolin and olein contained in admixture in the oil, the reaction is the same as though only free oleic and linolic acids are being hydrogenized. Thus if we consider the material undergoing hydrogenation to consist of stearic acid, oleic acid and linolic acid, it is apparent that the proportion of stearic acid may be increased either by adding more stearic acid from another source, or else by converting a part of the linolic acid to stearic acid by hydrogenation. In either case the product consists of a mixture of (1) the original material, and (2) the additional stearic acid. In converting a part of the linolic acid to stearic acid, only a part of the original material is hydrogenized, as is, of course, apparent.

Thus, when an oil, like cottonseed oil, is subjected to hydrogenation, the solid portion or stearin (about 20% of the whole body of oil) is not affected by the hydrogen. Only the unsaturated glycerides, olein and linolin, can be converted by the addition of hydrogen. Hence, if a part only of these unsaturated glycerides are converted, one may say that the oil, as a whole, has not been completely hydrogenized. As a result of such incomplete hydrogenation there results (1) a part of the oil consisting of the original solid glycerides and of the unsaturated gly-

cerides which have not added on hydrogen, and remain unchanged; and (2) the other part consisting of the glycerides, stearin and olein, which have been converted or changed by the addition of hydrogen to olein and linolin. The product, therefore, consists of a *mixture* of (1) a portion of the original oil, and (2) of that portion of the oil which has been hydrogenized—just as truly as if a part of a body of oil had been withdrawn, hydrogenized until it is hard and solid (on cooling) and then mixed with the main body of oil. (Walker, XQs. 124-126, p. 329).

The Court failed to give effect to the evidence and admissions of Respondent's expert witnesses, that the results were practically the same irrespective of the method followed. Dr. Baskerville, for the Respondent, had asserted at the trial that the purpose of hydrogenizing, or hardening, the cottonseed oil, as described in the patent, was to give the oil the physical consistency of lard by adding to the oil the solid fats resulting from the hydrogenation.

> "Q120. Why do you consider the *added* fats to be the significant and substantial thing? A. Because the *added* fat brings about an elevation of the melting point.
>
> "Q121. And what does the added fat have to do with the lard-like qualities of the product? A. When the proper quantity is there, the substance becomes semi-solid and acquires the physical properties of lard.
>
> * * * * * * * * *
>
> "By the Court:
>
> "Q123. Where is there anything in this patent about added fats? A. It means added solid fat.
>
> "Q124. By reason of the hydrogenation? A. Yes, sir" (p. 464).

* * * * * * * * *

"Q151. As I understand you, from a practical standpoint, the cook using the substance has to do with the consistency of the substance which is attained by the *increase of solids due to hydrogenizing?* A. I think so" (p. 466).

Mr. McCaw, one of Respondent's superintendents, long versed in the manufacture of prior art artificial lard, testified that the addition of oleo stearin to cottonseed oil was also for the same purpose.

"Q239. What was the function of oleo stearin in the compound? Was it that of hardening the cottonseed oil so that the mixture would be semi-solid at ordinary temperatures? A. Our object in using oleo stearin in the manufacture of a lard substitute *was to give the oil a consistency approximating the consistency of hog lard.*

"Q240. And inasmuch as cottonseed oil *per se*, at ordinary temperature, was a liquid, you added the oleo stearin to harden it sufficiently so that at ordinary temperatures *it would have approximately the consistency of lard?* A. Yes" (Rec. p. 180).

The Respondent's chemical superintendent, Mr. Morrison, testified that the same results are secured whether the solid fats are mechanically mixed with the oil or are added by subjecting the oil to hydrogenation.

"RDQ124. In producing a substance of corresponding consistency by partial hydrogenization and by mixing as in the making of the compound, which adds the greater percentage of solid fats? A. *In the final analysis they are practically the same.* In the compounds we add a given amount to the oil, whereas in the hydrogenated products like 'Kream Krisp' and 'Crisco' we increase the solids at the expense of the liquid. *So that in the ultimate analysis, however, the*

ratio between the solids and the liquids is pretty nearly the same.

"RDQ125. But when it is done by the hydrogenating process does the process increase the percentage of saturated fats to the same extent that they are increased by the addition of them in making the compound? A. Possibly, not quite, but it is very close to the same figures." (Pp. 495-496.)

It is quite apparent, therefore, from the foregoing that, when solid fats are added to the oil, whether by a mechanical process of mixing, or by a process of hydrogenizing a part of the oil to increase the percentage of solid glycerides in the oil, a *mixture* inevitably results, and that, if the Court of Appeals assumed a difference between the patented product and the products of the prior art in this respect, "because one is a mixture and the other is not" it assumed a difference which does not exist and which is contraverted by the evidence.

The Court's opinion can rest only on what is submitted to be an erroneous view of the law, and to refer, not to any difference between the products themselves, but solely to a difference in the *procedure* or process by which they are produced.

If a material is lard, or is practically lard, or is what a "plain man" would call lard, or is so like lard that, from the standpoint of a chemist who analyzes it, or a cook who uses it, the difference is unimportant, there is no novelty in the product as such and no one has the right to patent it or to exclude the public from its use.

On this main question, we submit the Court of Appeals should be reversed, and the patent decreed to be void for lack of invention.

Law of Novelty and Patentability.

The Revised Statutes provide for the grant of Letters Patent under certain conditions to

> "any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter" (U. S. R. S. Sec. 4886).

This Court has interpreted the word "art" as meaning method, process or procedure, thus

> "Thus an art—a process—which is useful is as much the subject of a patent as a machine, manufacture or composition of matter" (*Telephone Cases*, 126 U. S. 1).
>
> "An art may require one or more processes or machines in order to produce a certain result or manufacture. The term 'machine' includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. But where the result or effect is produced by chemical action by the operation or application of some element or power of nature or of one substance to another, such modes, methods or operations are called processes." (*Corning vs. Burden*, 15 How., 252, 267.)
>
> "A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art." (*Cochrane v. Deener*, 94 U. S. 780, 788.)

A claim of a patent cannot cover both a product and a process, since each is a distinct subject of a patent or of a patent claim.

Thus this Court, in *Merrill v. Yeomans*, 94 U. S. 568, carefully distinguishing process from product, held that the patent there in suit described three

distinct inventions or patentable subjects matter (a) a distilling apparatus (b) a new precess or mode of distilling heavy hydrocarbon oils, and (c) the product of the distillation, namely the deodorized heavy hydrocarbon oil fitted for use in the arts. The defendant did not use either the process or the apparatus. The question in the case was whether one of the claims was for a process or for a product. It read as follows:

> "I claim the above described new manufacture of the deodorized heavy hydrocarbon oils, suitable for lubricating and other purposes, free from the characteristic odors of hydrocarbon oils, and having a slight smell like fatty oil, from hydrocarbon oils, by treating them substantially as is hereinbefore described."

The Court held that the claim was not for a product but for a process, saying that if a product were meant "the words 'by treating them substantially as described' are useless" (p. 571), and that "if the article was the discovery which he sought the exclusive right to make, use and sell, he was entitled to that monopoly, however produced."

In respect of the several claims of the patent, the Court said:

> "There is no question here but that the patent is good for the second claim, for the superheating coil, with its steam pipe, etc.; and we are all of opinion that it is good for the process of distillation described in the specifications, by which the heavy hydrocarbon oils are deodorized. It is, therefore, a valid patent for two important matters, well set forth and described. If the patentee is also entitled to a patent for the *product* of this distillation, and has failed, as we think he has, to obtain it, the law affords him a rem-

edy, by a surrender and reissue." (P. 573.)

The doctrine that a single claim cannot be construed to cover both a process and the product of that process, and that a process and a product are distinct and different things under the patent law, has been uniformly sustained by this Court.

> *Rubber Co. v. Goodyear,* 76 U. S. 788, 796;
> *Powder Co. v. Powder Works,* 98 U. S. 126 (1878);
> *Keystone Bridge Co. v. Phoenix Iron Co.,* 95 U. S. 274 (1877);
> *Grant v. Walter,* 148 U. S. 547 (1893);

To the same effect:

> *Durand v. Schulze,* 61 Fed. 819, 821, C. C. A. 3rd Circuit.

This Court has likewise held that a manufacture or product of a process may not be new and therefore unpatentable; while the process or agency by which it is produced may be patentable. It has further held that, if the product is old, it is of no importance, in considering its patentability to inquire from what material or by what process it was produced. In the Wood Paper Patent case, (90 U. S., 23 Wall., p. 566) the claim of the Watt & Burgess patent was as follows:

> "What we claim * * * as a new article of manufacture, is a pulp suitable for the manufacture of paper, made from *wood* or other vegetable substances, *by boiling the wood or other vegetable substance in an alkali under pressure*" (p. 577).

It described the product by the process of its production, namely, a chemical process of boiling

in an alkali under pressure, and as one which was thus chemically produced from wood or other vegetable substance. The Court said:

> "* * * It is quite obvious that a manufacture, or a product of a process, may be no novelty, while, at the same time, the process or agency by which it is produced may be both new and useful—a great improvement on any previously known process, and, therefore, patentable as such. And it is equally clear, in cases of chemical inventions, that when, as in the present case, the manufacture claimed as novel is not a new composition of matter, but an extract obtained by the decomposition or disintegration of material substances, it cannot be of importance from what it has been extracted.
>
> "There are many things well known and valuable in medicine or in the arts which may be extracted from divers substances. But the extract is the same, no matter from what it has been taken. A process to obtain it from a subject from which it has never been taken may be the creature of invention, but the thing itself when obtained cannot be called a new manufacture. It may have been in existence and in common use before the new means of obtaining it was invented, and possibly before it was known that it could be extracted from the subject to which the new process is applied. Thus, if one should discover a mode or contrive a process by which prussic acid could be obtained from a subject in which it is not now known to exist, he might have a patent for his process, but not for prussic acid. If, then, the Watt & Burgess patent for a product is sustainable it must be because the product claimed, namely, 'a pulp suitable for the manufacture of paper, made from wood or other vegetable substances,' was unknown prior to their alleged invention."

* * * * * *

"It is insisted, however, that the paper pulp which had been produced before the invention of Watt & Burgess was not pure cellulose, that it was only approximately pure, and from this it is argued that the pure article obtained from wood *by their process* is a different and new product, or manufacture. Whether a slight difference in the degree of purity of an article produced by several processes justifies denominating the products different manufactures, so that different patents may be obtained for each, may well be doubted, and it is not necessary to decide. The product of the complainant's patent is a pulp suitable for the manufacture of paper, and, confessedly, to make white paper it requires bleaching. The pulp which had been obtained by others from rags in large quantities, and from straw, wood, and other vegetable substances to a lesser extent, was undeniably also cellulose, suitable for manufacturing paper, and, so far as appears, equally suitable. The substance of the products, therefore, was the same, and so were their uses. The design and the end of their production was the same, no matter how or from what they were produced" (pp. 593-594). (Italics ours.)

The Court said, in respect of the pulp previously made by other processes:

"* * * A product or a manufacture had been obtained and had been used in the arts a manufacture which was the same in kind and in substance, and fitted for the same uses as the article of which the complainants now claim a monopoly. That this manufacture may have been the product of *one or more different processes* is, as we have said, quite immaterial in considering the question whether it is the same as that produced by the complainants." (P. 595.) (Italics ours.)

It was urged upon the Court that the patented product was superior to prior products, that

> "* * * the product claimed as a new manufacture is cellulose, of the proper consistency and dimensions, and with a fibre of a proper length for immediate felting into paper, while the cellulose obtained from rags or wood, or other vegetable substances, *by other processes* than that of the Watt & Burgess patent, had a longer fibre, and required, in addition to chemical agency, mechanical treatment to prepare it for use in paper making. Hence it is inferred the product is a different one, that it is properly denominated a new manufacture, and that it was patentable as such." (P. 595.) (Italics ours.)

But the Court answered this argument as follows:

> "This argument rests upon a comparison of the finished product of the complainants with an article in an intermediate stage, and while undergoing treatment preparatory to its completion. It may be quite true that at some stage of its preparation the paper pulp made and used before 1853 was not of the proper consistency for paper making, or that its fibre was too long, and that it required additional manipulation to fit it for use. But when it had received that treatment, its fibres were reduced to the proper length, and it became capable of all the uses to which it is claimed the product of the complainants is adapted. It is with the finished article that the comparison must be made, and, being thus made, we are of the opinion that no substantial difference is discoverable.
>
> "* * * Paper pulp obtained from various vegetable substances was in common use before the original patent granted to Watt & Burgess, and whatever may be said of their process for obtaining it, the product was in no sense new. The reissued patent, No. 1448,

> is, therefore, void for want of novelty in the manufacture patented" (pp. 595-596).

This Court, in a later case, held that a product produced synthetically from *coal tar* by a novel process and like previously existing product produced from *vegetable matter,* is not patentable. This is the case of *Cochrane v. Badische Anilin & Soda Fabrik,* 111 U. S. 293 (called the Alizarine case). The patent involved in the suit described a process of manufacturing a dye called *alizarine,* which had been previously produced from the vegetable *madder root.* The patentees, Graebe and Liebermann had investigated alizarine as made from the madder root for the purpose of determining what was its mother substance. On chemically treating alizarine with zinc dust, they obtained a hydrocarbon identical with that formed in coal tar, called anthracine. They then determined to work backward, and convert or change anthracine into alizarine, and finally discovered a chemical process by which this could be accomplished. This process is described in the patent copied on pages 294-296, and specifies in detail certain steps and chemical reactions employed to produce the product.

The claim of the patent, No. 4,321, reads as follows:

> "Artificial alizarine, *produced from anthracine* or its derivatives by either of the methods herein described, or by any other method which will produce a like result."

It was contended on behalf of the patentees that, as the defendant's product was produced from *anthracine by a chemical process* and was a dyestuff—it infringed the claim. But this Court said:

> "It was an old article. While a new process for producing it was patentable, the product itself could not be patented, even though it was a product made artificially for the first time, in contradistinction to being eliminated from the madder root. Calling it artificial alizarine did not make it a new composition of matter, by reason of its having been prepared artificially for the first time from anthracine, if it was set forth as alizarine, a well-known substance." *The Wood Paper Patent*, 23 How. 566, 593 (p. 311).

The decision of the Court of Appeals in the instant case is at war with these established doctrines of this Court, as herein shown. That decision sweeps aside all distinction between process and product. Notwithstanding that, in the language of the Court:

> "by the mixture of cottonseed oil and animal stearin, a substance can be produced *which for practical purposes is the same thing as* Burchenal's chemically changed cottonseed oil" and "the difference [between them] to be unimportant from the standpoint of either chemist or cook,"

that decision holds Burchenal's product to be new and patentable. As the reason therefor, the Court stated that the prior art artificial lards were mixtures (i. e. produced by a mechanical process of mixing) and Burchenal's was not produced by *that process* but by a chemical process of hydrogenation.

On petition for rehearing (Rec. p. 780) it was called to the Court's attention that in any event both Burchenal's and the prior art products were mixtures of different glycerides, and that, if the two articles are the same, then to call one a mixture because of its mode of production, and to call the other "mixtureless" because no separate

act of mixing was a part of its mode of production, does not create any distinction between them as products or compositions of matter (p. 880).

To this, the Court reannounced its position in its decision on rehearing, that

> "Our decision is and has been based, on a firm conviction, that *what is practically lard,* consisting solely of one vegetable oil in a state of arrested hydrogenation, *is a new thing* in the sense of the patent law; * * *
>
> "The results of such evolutionary treatment, are by their genesis so novel, that analysis of constituents is immaterial. Patentable novelty is not in their parts, as revealed by quantitative or qualitative analysis, but in a practical functional identity between animal products, and a vegetable product as chemically changed" (p. 803).

It is submitted by the Petitioner that, since Burchenal's product is by quantitative and qualitative analysis practically no different from lard, it stands in no different position as to novelty or patentability than the Burgess & Watt's pulp produced chemically from wood by the alkali process, in the *Wood Paper Patent* case, *supra,* or than Graebe and Liebermann's artificial alizarine which had its genesis in a mineral coal tar product instead of the vegetable madder root, in the *Cochrane v. Badische case, supra.*

In the *Wood Paper Patent case, supra,* this Court disregarded that part of the patent claim which described the mode of production, to wit: "made from wood or other vegetable substance, by boiling the wood or other vegetable substance in an alkali under pressure", and looked to the product to see if the product itself was new, regardless of its mode of production.

In the Alizarine Case, similarly, this Court looked to see if alizarine itself was a new product,

independently of its mode of production and the materials of which it was made, and disregarded as immaterial that part of the patent claim which described the product as "produced from anthracine or its derivatives by either of the methods herein described, or by any other method which will produce a like result."

There can be no doubt that if there had been presented to the Court a claim for

> "An artificial lard produced from cotton-seed oil by incompletely hydrogenizing the oil,"

or one in the words of the claims of the Burchenal patent

> "A homogeneous lardlike food product consisting of incompletely hydrogenized cotton-seed oil."

and it appeared, as held by the Court below, that the product was indistinguishable by chemist or cook from old artificial lard, the Court would have held such claim to be invalid. It would have disregarded the genesis of the material and the mode of its production, and, if it had found the product to be "what a plain man would call lard", to be indistinguishable from prior lard or artificial lard by analysis and usefulness, and thus not to be new, the Court would have held the product to be lacking in novelty and, therefore, unpatentable.

An analogy is presented. Water may be produced synthetically by chemically combining oxygen and hydrogen. It does not differ from distilled water. If produced by a chemical synthesis for the first time and claimed as

> "A pure, wholesome liquid drink, consisting of hydrogenized oxygen,"

obviously it would be unpatentable notwithstand-

ing the phraseology in which the claim was clothed and the statement of making the product, for in the Wood's Paper case, *supra,* the Court said:

> "Thus if one should discover a mode or contrive a process by which prussic acid could be obtained from a subject in which it is not now known to exist, he might have a patent for his process, *but not for prussic acid.*"

In the instant case, lard as a white homogeneous semi-solid was a common product extracted from the fatty tissues of the hog. Artificial lard derived from cottonseed oil, by hardening the oil to a homogeneous white or yellowish semi-solid, was likewise a common product. Similarly a homogeneous artificial lard or semi-solid food product, consisting of cottonseed oil and hard fats (i.e., oleo-stearin or that produced by hydrogenizing a part of cottonseed oil, such as Jewel Compound or Flake White), is a part of the prior art.

It is submitted therefore that the claims for "a lardlike food product, consisting of partially hydrogenized vegetable (cottonseed) oil," are invalid. The statement of process—incomplete hydrogenization—imparts no novelty to the old product. If it be the same as lard derived from hog fat, it is not new. If it be the same as artificial lard heretofore made from cottonseed oil, a part of the oil having been hydrogenized, it is not new.

The Court of Appeals held that while the patented product is practically lard and is indistinguishable from prior art products by chemist or cook, yet it is patentable.

If the ruling of the Court of Appeals be permitted to stand, it will create confusion in the administration of the patent law. It wipes out the line of demarcation between a claim for a product, and a claim for a process, and holds that

a claim for a product which is old, is sustainable because the product is made by a particular process.

Its decision is at variance with the established doctrines and rulings of this Court, that, if a product is old, the patent therefor is invalid, and that it is immaterial from what materials the product is made or by what process it is produced.

Merrill v. Yocmans, supra;
Powder Co. v. Powder Works, 98 U. S. 126;
The Wood Paper Patent Case, supra;
Cochrane v. Badische (The Alizarine Case) supra;
Grant v. Walter, 148 U. S. 547, 553;

The decision of the Court of Appeals is contrary to the decisions of the Circuit Court of Appeals in other Circuits, wherein the doctrines of this Court have been followed; viz:

Durand v. Schulze, 3rd C. C. A., 61 Fed. 819;
Sanitas Nut Food Co. v. Voigt, 6th C. C. A., 139 Fed. 551; opinion by Lurton, C. J.;
Dunn Wire-Cut Lug Brick Co. v. Toronto Fire Clay Co., 6th C. C. A., 259 Fed. 258, 261;
National Chemical & Fertilizer Co. v. Swift & Co., 7th C. C. A., 104 Fed. 87, 89;
American Tube Works v. Bridgewater Iron Co., 1st C. C. A., 132 Fed. 16, 17 (citing *Cochrane v. Badische, supra*) opinion by Mr. Justice Holmes;

a patent for an *old* product has been sustained because of the reference in the claim therefor to any particular process by which the product was made. It is obvious that, if the product is *old*, a patent cannot legally be granted therefor, since the patent Statute provides for the grant of Letters Patent only to him "who has invented or discovered any *new* and useful art, machine, manufacture or composition of matter, or any *new* and useful improvements thereof * * *" (Sec. 4886). Hence, if the thing or product is not *new* it is wholly immaterial from what it is derived, by what process it was produced, or by what machine it was manufactured.

In the instant case, the product or thing, viz. "a homogeneous lardlike food product" or "a white or yellowish semi-solid closely simulating lard," is not new, and therefore is unpatentable.

The Court of Appeals erred in holding the patent to be valid.

The Patent in Suit Assumes to Deprive the Public of its Vested Rights.

Considering the case at bar from another angle, it would appear that the decision of the Court of Appeals, if permitted to stand, would deprive the public from the enjoyment of its right to practice the old process of hydrogenating oils, and of putting the products of that process, to the chief uses for which such products are adapted.

The chief uses of fats and oils of animal and vegetable origin are for:

> "foods, lubricating purposes, and the manufacture of numerous things—the manufacture of glycerine, soap." (XQ283.)
>
> "XQ285. But the great use of oils and fats of animal and vegetable origin is that for food, is it not? A. That is a great use.

"XQ286. That is the greatest use, is it not? A. I think probably it is." (Dr. Baskerville, p. 483.)

Normann in his British patent described to the world and dedicated to the United States, the process of hardening oils by hydrogenation to any extent desired, so that as thus hardened they could be used for the same purposes for which oils and fats had previously been used. He demonstrated that such hydrogenized products differed from the original oils only in the conversion of their well-known unsaturated glycerides to glycerides of higher saturation.

To debar the public from the right to use for edible or culinary purposes, the products produced from edible oils by the old Normann process of hydrogenation, would be unjust and unequitable.

> "It has often been held that the mere fact that one who uses a patented process finds it applicable to more extended use than has been perceived by the patentee, is not a defense to a charge of infringement. It follows necessarily that the public cannot be deprived of an old process because someone has discovered that it is capable of producing a better result, or has a wider range of use than was before known." (*Lovell Mfg. Co. v. Cary*, 147 U. S., 623, 634.)

And yet it appears in the present case that the Respondent seeks to prevent anyone from using oils which have been subjected to Normann's process of hydrogenation, as a semi-solid cooking fat, or to produce lard therefrom.

In addition to the patent in suit No. 1,135,351, the Respondent owns another Burchenal patent No. 1,135,935, dated April 13, 1915 (p. 582), which describes the "Flake White" product here-

inbefore referred to as produced and marketed before Burchenal's conception of the product of the patent in suit. This patent No. 1,135,935 claims any "lardlike composition comprising edible hydrogenized fatty oil," and any "edible oil product comprising edible hydrogenized oil material and edible fatty material blending therewith." The Respondent is thus by the two patents apparently given a monopoly of all semi-solid or edible hydrogenized products, however produced, when applied to culinary purposes. This, too, when it appears that the patentee Burchenal did not invent the process of hydrogenation, and that the ultimate products are indistinguishable from prior art products.

It is a matter of common knowledge that, without a sufficient proportion of edible fats in the dietary, malnutrition results; and that, as a result of the recent war, there has been a great shrinkage in the production of semi-solid edible fats. The patent in suit has been so broadly construed by the Court of Appeals as substantially to cover all semi-solid fats of vegetable origin, notwithstanding such products cannot be distinguished "by chemist or cook" from the products of the prior art. In the face of such monopoly secured by such construction, hosts of producers, who could otherwise contribute to restore the balance lost by the shrinkage of available natural fats, will find it impossible thus to contribute; but the present situation makes it a matter of public interest that such balance be restored as quickly and as fully as possible. That any single producer could accomplish this result may well be doubted.

The ruling of the Court of Appeals affects not only consumers, but it directly affects the growers of cotton, peanuts and other oil-producing

vegetables, the manufacturers who extract the oil therefrom, the importers of soya bean oil and other oils produced abroad, and the manufacturers who employ such oil in the production of cooking fats.

It is not intended to suggest that a patent, which secured a monopoly in the manufacture, use or sale of a product, should be held to be of no effect merely because the public is affected by such results; but it is respectfully submitted that, when such is the result, and large numbers of people are affected thereby, public interests require that care should be exercised to prevent the public from being deprived from the use of an old product or an old process by such construction as is placed on the patent in suit by the Court of Appeals.

It would be oppressive to deprive the public of the right to use in its dietary old food products, stated by the Court to be indistinguishable from the alleged new product because someone claims to have produced such products in a new way, which new way may or may not be patentable as a process. (*Sewall v. Jones*, 91 U. S. 171, 187.):

> "The Gent patent[1] is, in our judgment, in no new sense, a new product; but only a modification or advance upon products already as widely known as the civilized breakfast table. Patents cannot rightly be made to cover every change in the betterment of material conditions. The growth of the art of cereal foods, unless something new *in specie* is contributed, is the growth of common public thought,

[1]The claim of the Gent patent for the product read as follows:

> "1. As a new article of manufacture, the herein described alimentary product from corn which consists of hulled, dry, hard, uncooked flakes made from the kernals."

and, therefore, independently of the process (which may be protected) belongs to the public (*Cercaline Mfg. Co. v. Bates*, C. C. A. 7th, 101 Fed. 272, 281.)

"* * * * the claim[1] is for cooked flakes of grain, usually wheat, as a patentable article of manufacture. * * * After all that can be conceded that can be reasonably claimed in favor of the nourishing quality of grain when prepared according to the patent, it is at last an article which pertains to the cooking art; an art, if it may properly be called an art, which is as old as the discovery of the uses of fire, and as varied in its exemplifications as the sands of the sea. Whatever novelty in a patentable sense there may be in flakes of cooked wheat which are thin crisp and slightly brown, must be found in some superior efficaciousness, or some new properties which they possess, and not in any mere change of form produced by mechanical division of the cooked grain either before or after the last step in cooking. * * * Kellogg claims a patentable article because his cooked flakes are large, thin, crisp and slightly brown, same being readily soluble and containing dextrine. * * * (p. 555). But the fact that cooked flakes of wheat contain some dextrine will not make a new article in a patentable sense. It is at most a new form of cooked wheat, and possibly a new article of commerce, by reason of some advantages it may possess over any earlier form, but, as no *new product* has resulted, it cannot be regarded as a new article in a patentable sense (p. 555).

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[1] The product claim of the Kellogg patent read as follows:

"2. The improved cooked alimentary product from grain used as wheat, hereinbefore described, which exists in the form of large, attenuated baked, crisp and slightly brown flakes of practically uniform thickness, the same being readily soluble and containing dextrine, as specified."

* * * The cooked flakes of the Kellogg patent are not, in our judgment, a new product. It is at most a step in advance upon products well-known in the trade and to the breakfast table." (P. 556.)

(*Sanitas Nut Food Co. v. Voigt*, C. C. A. 6th, Lurton C. J., 139 Fed. 551, 553, 555, 556.)

"But in my opinion the complainants' product, independently of the process of making it, cannot be supported as for a new composition of matter, or a new substance not before known. Commercially speaking, it may be a new article of manufacture, but it is, after all, only an improved preparation of Indian corn, with the same characteristics and qualities as other similar preparations. It may be less liable to spoil, more porus, more easily soluble; it may unite more readily with the diatase of malt—but these are not new and peculiar qualities; they are only the same qualities in an improved degree, which are inherent in other preparations of the same substance.[1]"

(*Maryland Hominy & Coralline Co. v. Dorr*, C. C. Md., 46 Fed. 773, 776.)

In the foregoing cases, patents for food products are held to be invalid (even though in some instances claims for the processes for producing them were sustained), where it appeared, as in the present case, that the products differed either

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[1] The process claim was held to be valid and infringed. The product claim read as follows:

"2. The hereinbefore described product from Indian corn, consisting of separate grains, in a stringy or coralline form, and cooked and dried condition, substantially as described."

not at all or only in degree from those of the prior art.

In the case at bar, Normann and Kayser had taught the public all that is contained in the Burchenal patent. They showed that edible oils could be converted into edible semi-solids or solids as might be desired. The public, to whom Normann dedicated the process, should have the right to enjoy the fruits of that process.

> "The thing was within the circle of what was well-known before, and belonged to the public. No one could lawfully appropriate it to himself and exclude others from using it in any usual way for any purpose to which it may be desired to apply it" (*Brown v. Piper*, 91 U. S. 37, 41).
>
> "These rules apply alike, whether what preceded was covered by a patent or rested only in public knowledge or use. In neither case can there be any invasion of such domain and an appropriation of anything found there. In one case everything belongs to the prior patentee; in the other, to the public at large" (*Smith v. Nichols*, 88 U. S., 112, 119.)

Indeed it is as much the duty of the Courts to protect the public in the enjoyment of its rights in old processes and products as it is to protect a patentee in his monopoly of a *new* process or product; or, as more aptly said by the Court of Appeals for the 8th Circuit, in *Union Match Co. v. Diamond Match Co.*, 162 Fed. 148, 155:

> "The public should be protected against unwarranted monopoly, as much as the inventor against piracy."

So, when we find that the *process* of hydrogenation is within the domain of the public, and that the products, lard and artificial lard, are a part of the public's heritage, the Respondent is un-

warranted in attempting to secure to itself a monopoly of an old product made by an old process of hydrogenation. For, if the product be lard, or like lard, or like previous artificial lard products, it is old, and calling it by a new name does not give it patentability, no matter by "what path or process, new or old, inferior or improved, it is manufactured."

The Commercial Development of the Patented Product does not Supply Lack of Novelty.

In the District Court, as in the Court of Appeals, it was pressed on the Court that the Respondent had created a new industry—in what was referred to as a "new primary fat". Aside from the fact that the fat referred to in the patent in suit is neither "new" nor "primary", as has been herein shown, it is a matter of law as well as common sense that commercial development does not take the place of novelty, as a condition either precedent or subsequent to the validity of a patent, and does not supply the lack of invention in a patent. Commercial development depends too much upon the use and enjoyment of large capital, upon clever advertising and methods of exploitation, to furnish a safe criterion.

Notwithstanding that the sales of Crisco (manufactured by the Respondent and alleged by it to be the patented product) were brought about by a gigantic advertising campaign in which over $3,000,000 was spent (XQs.22-30, pp. 277, 278), its sales in 1916 were only one-eighth to one-fourth of the sales by Swift & Company alone, of artificial lard produced by hardening cottonseed oil to semi-solidity by the use of oleo stearin (Q14, p. 346). Every possible advertising scheme that

could be thought of was adopted in pushing "Crisco" (Qs110-115, pp. 139, 140; XQs39-46; pp. 278-280).

Any article will sell in large quantities if sufficiently advertised, especially when given some attractive or striking trade name, but its sales under such a stimulus are seldom indicative of invention.

McClain vs. Ortmayer, 141 U. S., 419, 429;
Duer vs. Corbin Cabinet Lock Co., 149 U. S., 216, 223, 224.

Non-infringement.

The Petitioner's Product.

The Petitioner's product, called by its trade name "Kream-Krisp", has its genesis in cottonseed oil, like the prior art artificial lards. Like those products, it is white and semi-solid, and consists of a mixture of saturated and unsaturated glycerides, linolin, olein and stearin, and is a mixture of cottonseed oil and added solid glycerides.

Kream Krisp is substantially identical with the prior art artificial lard, e.g., Jewel Compound or Flake White. It has substantially the same chemical composition as those products, so that if said products are excluded as anticipations of the patent in suit, Kream Krisp is excluded as an infringement.

Our position in respect of infringement may be stated as follows:

The claims in suit, as has been shown, specify broadly "a homogeneous lardlike food product" or artificial lard, described by a statement of the

genesis of the product and a description of its method of production, namely, cottonseed oil "incompletely hydrogenized." This product as thus claimed, is artificial lard, or, in the words of the Court of Appeals, is practically lard, and being such is, as a thing or substance, lacking in novelty The statement of the origin of the product, and the mode of its production, are of no moment, since the claim is not directed to a process. We are, therefore, in agreement with the Court of Appeals in its conclusion that, broadly speaking, the patented product is "practically lard" and "that by the mixture of cottonseed oil and animal stearin a substance can be [and long has been actually] produced which, for practical purposes, is the same thing as Burchenal's chemically-changed cottonseed oil." But the patent seeks, in the specification thereof, to distinguish the chemical composition of the patented product, *not from lard,* but from commercial mixtures or prior-art artificial lard, and to point out that the patented product is much closer in identity to lard than they are. Thus the specification states that the patented product is one

> "more closely resembling lard than do the commercial mixtures of cottonseed oil and animal oleo-stearin." (P. 502a, lines 92-94.)

After explaining why the patentee regards a chemical composition, in which a low percentage of linolin and a high percentage of olein is desirable in a product (since lard is thus characterized) the patent states:

> "It is therefore my object in the preparation of my new lard-like composition and food product, and in preparing same from

> cottonseed oil, to change the chemical composition of the oil to obtain a product with a *high* percentage of olein, a *low* percentage of linolin and the lesser saturated fats, and with only sufficient stearin to make the product congeal at ordinary temperatures." (Lines 65-74.)

Specifically, the proportions of these glycerides are given as olein 65 to 75%; linolin 5 to 10%; and stearin 20 to 25%.

In these proportions of its glycerides, the patented product closely resembles lard, and is specifically different from Jewel Compound, for example, and from Flake White, and in the same respect it is specifically different from Petitioner's product Kream Krisp, as shown by the following table:

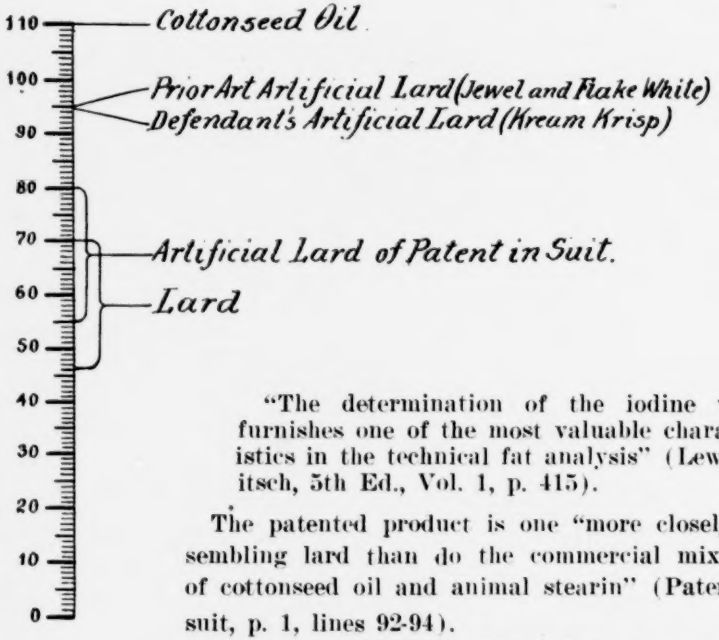
	Patented product.	Jewel.	Flake White.	Kream Krisp.
% linolin	5-10	41.5	42.	37.7
% olein	65-75	29.	28.	34.3
% stearin	20-25	29.9	28.	28.

(There is no dispute as to these figures.)

Consequently, if the claims in suit be narrowly construed as defining only the exact product as described in the patent specification, in the light of what the patentee said it was "my object to produce", we are not inconsistent in our position that said claims are not infringed by Kream Krisp, though urging that broadly considered, they are clearly anticipated by the prior-art artificial lard.

We are further fortified in our position, regarding non-infringement, if the claims be narrowly construed, by additional tests which are set forth in the patent as identifying the patented

Iodine Values.



"The determination of the iodine value furnishes one of the most valuable characteristics in the technical fat analysis" (Lewkowitsch, 5th Ed., Vol. 1, p. 415).

The patented product is one "more closely resembling lard than do the commercial mixtures of cottonseed oil and animal stearin" (Patent in suit, p. 1, lines 92-94).

The above diagram shows that the patented product closely resembles lard; while Kream Krisp, the alleged infringing product, closely resembles,—in fact, is like,—the prior art commercial mixtures.

product for, as shown more in detail in our Appendix (pages 126 to 130), Kream Krisp has neither the low iodine number (like lard) the saponification value, nor the percentage of added hydrogen set forth in the patent in suit. And in the Appendix, we show that these differences occur by reason of the fact that the *continuous* process followed by the Petitioner in hydrogenizing the oil, operates by a different law from that of the *batch* process recited in the patent.

In the District Court, Judge Hand said of Kream Krisp, in dealing with the question of infringement:

> "Furthermore, under any fair interpretation of the patent, there is no infringement" (Rec., p. 764).
>
> "Kream Krisp has a chemical composition extremely remote from that described in the specification of Burchenal. The following are the relative percentages:

	Burchenal per cent.	Kream Krisp. per cent.
Saturated fats	20-25	28.
Olein	65-75	34.3
Linolin	5-10	37.7

> "Thus it appears that Kream Krisp instead of being low in linolin is extremely high, and that instead of being high in olein as specified in the Burchenal patent, it has a percentage of olein which differs but little from that existing in refined cottonseed oil unhydrogenated. In fact, Kream Krisp seems to present many of the objections referred to in Burchenal's specification and to lack the very things upon which the latter based his right to receive a patent" (Rec., p. 765).

The majority decision of the Court of Appeals in respect of infringement says:

"The final objection to a decree in plaintiff's favor is that properly construed the claims in suit are not infringed because (a) the defendant's product widely varies from that of the patent in the relative percentages of saturated fats, olein and linolin, (b) the process pursued by defendant in [making its product is different radically from that said to be][1] disclosed or assumed in the patent in suit, and (c) that said claims are to be regarded as strictly limited, if not substantially abandoned, through or by reason of the proceedings in the Patent Office as revealed by file wrapper contents.

"As to the first point (a) it is enough to note that while the variation insisted upon is true, it must to negative infringement be at least a variation extending beyond the limits of a valid claim read in the light of the disclosure.

"In this instance it is not denied that what the defendant makes and sells is not only lard-like, homogeneous in the sense of mixtureless, and wholly consisting of an incompletely hdyrogenized cottonseed oil, but it is within the limits of iodine value, titer and melting points specified in the application. Therefore it is an infringement.

"It is true (b) that defendant's process of manufacture is very different from that of plaintiff, and we are willing to assume it different from and better than anything known to Burchenal or developed by Kayser. But this patent is upon a product, and if the product complained of is the patented article substantially as described, it makes no difference by what path or process, new or old, inferior or improved, the infringing product is manufactured. (*General Electric Co. vs. Laco-Philips Co.*, 233 Fed. Rep., 96)" (pp. 777, 778).

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1. Omitted by typographical error in printed copy of the Record.

It was pointed out to the Court of Appeals in the petition for rehearing (Rec., pp. 780, 795-798), that Kream Krisp was not "homogeneous in the sense of mixtureless", and that it was not within the limits of iodine value and titer specified in the Burchenal patent, by reference to the testimony in the record. In its decision, denying rehearing, the Court of Appeals said:

> "The chemical tests or limits indicated in Burchenal's disclosure, are put with an 'about'; they are not carried into the claims sued on, as they are into some not in suit; nor do all the usable and marketable specimens of defendant's factory show uniform tests. We adhere to the remarks concerning 'iodine values, titer and melting points' heretofore made, but do not and did not ground judgment thereon.
>
> * * * * * *
>
> "On this record, it may almost be said, that defendant's machines will cease to produce infringements, only when they yield what a plain man would not call lard (pp. 802-803).

The Court of Appeals based its decision, not on the similarity or dissimilarity of Kream Krisp with the patented product, according to the tests of identity stated in the patent, but on the ground that, because it is "what a plain man would call lard" and because it is produced by what the Court referred to as "arrested hydrogenation", Kream Krisp constitutes an infringement of the patent. The Court of Appeals' decision disregards as immaterial the evidence, which was not contraverted or denied, that in its percentage of proportions of the several glycerides, its iodine value, and in its capacity to respond to the Halphen test, Kream Krisp is different from the patented product and is substan-

tially identical with the prior products, such as Jewel Compound and Flake White, and is not within the ranges specified in the patent; that in saponification value and percentage of added hydrogen Defendant's product is not within these values stated in the patent; that its liability to grow rancid is like that of artificial lard or "commercial mixtures"; and that on subjection to the Halphen test Defendant's product shows free cottonseed oil. In this, it is submitted that the Court of Appeals is in error and should be reversed.

Petitioner's Manufacture began Prior to Grant of Patent in Suit.

The Petitioner, Berlin Mills Company, manufactures cellulose, fibre, pulp and paper, and especially bleached pulp. In order to make the bleach for its stock, it has a large plant for the electrolytic decomposition of salt for the production of chlorine, one of the ingredients necessary therefor. The by-products from the cell plant are caustic soda, which is a staple article on the market, and hydrogen. For many years, the hydrogen in great volume was suffered to go to waste, but, in the fall of 1913, Mr. Moore, Chief Chemical Engineer of the Petitioner, invented a novel process and a novel apparatus for utilizing the hydrogen in the hydrogenation of oils (Q32, p. 304) set forth in the Moore patents, Nos. 1,121,860 and 1,184,480 (Rec. pp. 681-702).

The Petitioner's product, Kream Krisp, was first placed on the market in September, 1914, and by March 1, 1915, the production was between one and two tons daily or at an annual rate of 300,000 to 600,000 pounds (Qs. 207, 208, p. 378).

Kream Krisp was thus on the market in large quantities at least seven months prior to the grant of the patent in suit on April 13, 1915.

At the time when the petitioner embarked on the manufacture of Kream Krisp, the process of hydrogenizing oils had been disclosed to the world by Dr. Normann in his British patent No. 1515 of 1903, and by other investigators hereinafter referred to (Appendix pp. 106-108); and the hydrogenation process had been dedicated to the citizens of the United States by Dr. Normann's failure to obtain United States Letters Patent, so that people in this country had the free and unlimited right to hydrogenize oils to any desired extent and to put them to the accustomed uses of oils or fats. Moreover, at the time when the Petitioner began the manufacture of its product and placed it on the market, there was nothing to prevent the Petitioner from hydrogenizing oils to any consistency it desired and from putting them to any common use. In its manufacture of Kream Krisp, the Petitioner derived no knowledge of anything contained in the patent in suit, which, at that time, was unissued. It did not use the batch method of hydrogenizing oils as described in the Burchenal patent, but developed a new apparatus and a new process of hydrogenation by which a product is produced, characterized, not by a low percentage of linolin and a high percentage of olein, but, on the contrary, one which, as stated by Judge Hand, in the District Court, is extremely high in linolin and has but little more olein than is present in refined cottonseed oil.

The Patent defines the Product as "Closely Resembling" and "Closely Simulating" Lard.

The patentee, Burchenal, states in reference to his product:

> "It is * * * my object in the preparation of my new lardlike composition and food-product, and in preparing same from cottonseed oil, to change the chemical composition of the oil to obtain a product with a high percentage of olein, a low percentage of linolin and the lesser-saturated fats, and with only sufficient stearin to make the product congeal at ordinary temperatures" (lines 65-74, p. 1).

Again he says:

> "It will thus be seen that I have produced an ideal food product, which is high in olein, low in linolin and lesser-saturated fats, and with only enough stearin to make the product congeal at ordinary temperatures" (lines 21-26, p. 2.)

Thus the patentee identifies the product, which he seeks to produce, as lard, or like the lard extracted from hog fat, for lard is "a homogeneous white semi-solid" or food product with *"a high percentage of olein, a low percentage of linolin"* and lesser-saturated fats and with sufficient stearin to make the product congeal at ordinary temperatures.

The patented product, irrespective of its origin and process of manufacture, is specifically described as having a saponification value of about 195; and iodine value of 55 to 80; a titer of 35° C. to 42° C.; a melting point of 33° C. to 40° C.; showing no free cottonseed oil under the Halphen test; and as having the chemical composition of 20 to 25 per cent. stearin, 65 to 75 per cent. olein, and 5 to 10 per cent. linolin.

The close resemblance of the product of the

Burchenal patent and lard may be compared by the following table:

	Burchenal product.	Lard.
Sapon. value (about)	195	195
Iodine value (about)	55-80	46-70
Titer (about)	35°-42° C.	39°-40° C.
Melting point (about)	33°-40° C.	33°-42° C.
Halphen test	No reaction.	No reaction usually.
Stearin (sufficient for congealing	20-25%	40-42%
Olein (high)	65-75%	48-50%
Linolin (low)	5-10%	8-10%

The iodine value, titer, saponification value and melting point of lard are within the ranges of these values as set forth in the patent. The Burchenal product, like lard, is low in linolin. There is a difference between the products in the exact proportions of olein, but both have a high percentage of olein, which is characteristic of lard, and sufficient stearin to make the product congeal at ordinary temperatures.

The specification of the patent explains from the point of view of the patentee why the product should be like lard:

> "All such vegetable oils contain glycerides of unsaturated fatty acids, and among these, notable quantities of fatty glycerides of lower saturation than olein. It is the presence of these glycerides of lower saturation that seriously affects the rancidity of the material. Oxidation is largely the cause of rancidity, which oxidation weakens the fat at the point of absorption at the double bonds, and these glycerides of lesser saturation readily absorb oxygen from the air at ordinary temperatures, while the more highly saturated glycerides, as olein, only absorb oxygen at elevated temperatures. It is evident, therefore, that oils or fats contain-

ing notable quantities of glycerides of linolic acid, or of lesser saturation, are distinctly inferior as an edible product to those containing a minimum of these glycerides with a larger per cent. of olein. On the other hand, while it is important to get rid of the readily oxidizable glycerides of lower saturation, it is also important not to supply too large a per cent. of fully saturated glycerides. The saturated glycerides of the arachidic, stearic, palmitic and other groups are of very small value for shortening, inasmuch as it is the liquid fats which contribute this value to the material. Saturated fats, however, serve the purpose of congealing the shortening within the food, and thus retain it equally distributed throughout the whole. Oil, liquid at the ordinary temperatures, does not make the best shortening, because the oil remains liquid, keeping the food in a soggy condition, and the oil will even settle to the under part of the cooked product and soil the cloth, paper, or whatever it may come in contact with. Moreover, fats of a melting point above the temperature of the human body, 98° F., are not so digestible as fats which are liquid at this point, or which have a melting point below 98° F.

"It is, *therefore*, my object in the preparation of my new lard-like composition and food product, and in preparing same from cottonseed oil, *to change the chemical composition of the oil* to obtain a product with a *high percentage of olein, a low percentage of linolin* and the lesser-saturated fats, and with only sufficient stearin to make the product congeal at ordinary temperatures." (P. 1, lines 23 to 74; Rec., p. 502.)

Without attempting at this time to point out the various inaccuracies in this statement regarding the shortening properties of oils and of hard fats, all of which are amply shown by expert witnesses at the trial, it is evident that the patentee, having in mind the desirable character-

istics of lard made from hog fat, namely, that it possesses only a small percentage of linolin and a high percentage of olein with sufficient stearin to cause the mass to congeal at ordinary temperatures, was endeavoring to show that his product was substantially identical with lard in this respect. It is not in the proportion of *saturated* glycerides that the patented product more closely simulates lard than do the prior art "commercial mixtures" or artificial lards, for, as will be subsequently shown, the patented product is described as containing 20 to 25% saturated glycerides, and hog lard has approximately 40 to 42%. In each case, however, there are sufficient saturated glycerides to cause the product to congeal at ordinary temperature.

The identity of the patented product with lard is emphasized throughout the specification in the statements that the product is one "closely simulating lard" (line 14); "lardlike composition and food product" (line 67); "closely resembling lard" (lines 92, 93); a lard like product thus prepared" (lines 105, 106); "food product, which is high in olein, low in linolin and lesser saturated fats, and with only enough stearin to make the product congeal at ordinary temperatures" (page 2, lines 23-26); and "lard-like food product" (claims 1 and 2).

Petitioner's product, Kream Krisp, is not lard-like, but, on the contrary, its identity with prior-art artificial lard from which the patentee attempts to distinguish his product, is clearly established by the record.

Rancidity.

Having substantially the same proportions of glycerides, as Jewel Compound, it is no different therefrom in respect of its liability to grow rancid (Bacon, RDQs. 363-365, Rec., p. 449), and thus is unlike lard and the patented product in this respect.

Petitioner's Process is not that Described in the Patent in Suit.

In the customary Normann *batch* process of hydrogenation, a given body of oil is placed in a container together with a small amount of catalyst (i.e., nickel) and hydrogen is either bubbled through the mixture, or the oil and hydrogen are mixed together. In the words of the patent in suit, "the oil is preferably agitated in a closed vessel in the presence of an atmosphere of compressed hydrogen". The same results are secured, however, whether the hydrogen be bubbled through the oil, or the oil and the hydrogen are agitated together. It will be remembered that oils such as cottonseed oil, consist of a mixture of linolin, olein, and saturated or solid glycerides, called "stearin." Since there is only a small quantity of the catalyst and a large body of oil, the reaction between the hydrogen and the oil is both *progressive* and *selective*.

Imagine that a single bubble of hydrogen passes upwardly through a large body of oil containing the catalyst. As it passes upwardly, it comes in contact with very few of the molecules of the oil which are in contact with the catalyst. A chemical action takes place at these points of contact by addition of hydrogen to the molecules

of linolin, and the linolin is converted to olein. *It is quite apparent that the remainder of the body of the oil is unaffected.* A second bubble passes upwardly through the mixture of oil and catalyst, and another small portion of the linolin in the oil unites with the hydrogen and is converted thereby into olein. That is what is meant by stating that the reaction is progressive. In other words, a little at a time, the unsaturated glycerides are changed to glycerides of higher saturation. If the hydrogen be constantly added, more and more of the oil will be hydrogenized, and, as the proportions of the linolin are decreased, the oil will gradually grow in hardness from a liquid to a semi-solid. If the supply of hydrogen be continued under these circumstances until a large part of the linolin has been changed to olein, the hydrogen will then unite with the olein and saturate it into a solid glyceride, until finally, if the reaction be carried on long enough, the entire body of oil will have been converted from a liquid state to a hard solid state.

During this operation of the batch process of hydrogenation the hydrogen *selects* the linolin, because linolin has six double bonds and is more unstable than olein, which has but three double bonds, and linolin, by reason of this fact, is acted upon first by the hydrogen and converted to olein. This phenomenon, *which is an inevitable result of the batch process,* and is the law of that process, is explained by Dr. Walker (Rec., p. 299), and he is corroborated by Respondent's Chemical Superintendent, Mr. Morrison, as follows:

> "Q28. That is to say, it was your observation that the linolin was first changed to, say, olein, without a corresponding change of olein to stearin? A. That is correct, sir.

"Q29. So that in the final product you would have a fairly large proportion of olein, and a small proportion of linolin? A. That is correct, sir.

"Q30. In other words, you determined that there is a certain selective action that takes place during the hydrogenation? A. Yes." (Page 197.)

Moreover, this is the result which the patentee specifically states is the end and object of the process which he has described in the patent in suit, and is emphasized several times in the patent, viz:

> "It is, therefore, *my object*, in the preparation of my new lardlike composition and food product, and in preparing same from cottonseed oil, *to change the chemical composition* of the oil to obtain a product with a *high percentage of olein, a low percentage of linolin* and the lesser-saturated fats, * * *" (Burchenal patent 1,135,351, lines 65-72, page 1).

Again,

> "It will thus be seen that I have produced an ideal food product, which is high in olein, low in linolin and lesser-saturated fats * * *" (lines 21-24, page 2).

Petitioner's *process* is materially different from that of the batch process and operates in accordance with a different law. Instead of a progressive and selective reaction, caused by bubbling the hydrogen through the oil, or agitating the oil, catalyst and hydrogen together, a continuous or constant stream of oil, in a highly atomized state, is forced under great pressure and at high velocity through a diaphragm consisting of sheets of porous asbestos with a layer of nickel catalyst between them. The oil passes at lightning speed through the catalyst, and only a small part of

the oil is acted on, the *remainder of the oil passing through the diaphragm without any chemical reaction of the oil and the hydrogen therewith taking place.* Only a small part of the linolin is acted on, but instead of being changed to olein, it is converted to stearin. (It is possible that a small quantity of linolin is changed to olein and practically a corresponding amount of olein is changed to stearin, or that such linolin as is acted on by the hydrogen is changed directly to stearin). In any event, *the proportion of the olein in the original oil remains but slightly changed,* and the stearin or saturated glycerides are increased at the expense of the linolin. (Walker, XQ225, p. 341.) Thus, the product produced by the Moore or *continuous* process of Petitioner is different in its chemical composition, i.e., in its proportions of the several glycerides, from that produced by the process described in the patent in suit and first given to the world by Dr. Normann. To make this clear, a table[1] is presented showing the effect produced by the two processes in the treatment of cottonseed oil.

	Batch Process.		Petitioner's Continuous Process.	
	Cotton-seed oil.	Patented product.	Cotton-seed oil.	Petitioner's product.
% Solid Glycerides	21.5	20-25	21.5	28.
% Olein	32.5	65-75	32.5	34.3
% Linolin	46.	5-10	46.	37.7

Thus the two processes are different and produce different products.

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1. In the table presented it will be noted that the chemical composition of cottonseed oil is different from

Petitioner's Product is a Mixture.

The Court of Appeals characterized defendant's product as "homogeneous in the sense of mixtureless and wholly consisting of an incompletely hydrogenized cottonseed oil".

The word "mixtureless", which was coined by the Respondent in its argument before and adopted by the Court of Appeals, does not appear in the patent in suit and finds no basis or definition in the record. The word "homogeneous" is used in the patent, wherein the patentee states, in lines 9 to 13, page 1 of the specification that his invention is a food product " * * * hardened to a *homogeneous* white or yellowish semi-solid closely simulating lard." As has been pointed out, lard is not a chemically homogeneous substance, but is a mixture of different glycerides.

The product of the patent is not chemically a homogeneous substance for it is specifically described in the patent as composed of different glycerides in certain proportions. Cottonseed oil, likewise, is not chemically homogeneous, for it, too, consists of a mixture of different glycerides.

The term "homogeneous", as employed in the patent, is defined by the Respondent's expert, Dr. Baskerville, as follows:

> "Q11. Have you examined it, the product taken from this can, Plaintiff's Exhibit, Defendant's product, to determine whether or not it is homogeneous and if so with what

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that set out in lines 18-22, p. 2, of the patent in suit. It was agreed by all of the experts in this case that the composition of the cottonseed oil was erroneously stated in the patent. Morrison Qs135-138, p. 211; And to Q127, p. 210; Dr. Walker, Q46, p. 318; XQ194, p. 337 XQ181, p. 336; Richter, Q18, p. 358; and Baskerville, XQ74, p. 271.

result? A. I have; it *appears* homogeneous" (Rec., p. 265).

* * * * * *

"XQ38. What is your understanding of the word 'homogeneous' as used in your testimony? A. Uniform throughout.

"XQ39. Do you mean chemically uniform? A. I would say more *physically* uniform.

"XQ40. Is it made up of different glycerides, different from each other chemically? A. Yes." (Rec., pp. 267-268.)

Respondent's argument that the patented product is a single chemical compound, is rebutted in this instance, as in others, by Respondent's chemical expert.

Kream Krisp is *physically* homogeneous in the same sense and for the same reason that lard and the prior-art artificial lard are physically homogeneous, but this is due entirely to their treatment with refrigerated rolls and pickers by which the melted fat is rapidly chilled and air is incorporated therein (Dr. Walker, Q38, p. 310). The product of the patent in suit must be thus treated to give it the physical homogeniety of lard, as testified by Mr. Burchenal, although the patent describes no such treatment.

"Q491. Does the product which is withdrawn from the hydrogenating apparatus after being subjected to the process described in your specifications of the letters patent in suit, have this appearance (The physical appearance of lard)? A. No, no; that which comes from the apparatus is liquid, hot, and would more correspond to the appearance of the lard when it was heated.

"Q492. And without further treatment, when it is permitted to cool, does it have this lardlike appearance, which you describe? A. It depends entirely upon how it is cooled. It has to be subjected to the ordinary treatment for such material.

"Q493. What is that treatment? A. Run over a lard roll.

"Q494. What else? A. Well, it is subjected to the ordinary process, in all cases, a filtration, a deodorization and then run over a lard roll.

"Q495. And the product as it comes from the process described in the specification, has to be subjected to these various treatments before it becomes lardlike? A. Yes; lard is treated in that way." (Burchenal, Rec., pp. 44-45.)

The reason for the treatment of lard or artificial lard on chilled rolls is to secure the physical homogeniety of the product. Where the melted fat, as extracted from the hog tissue is permitted to cool relatively slowly, the harder glycerides, such as the saturated glycerides, start to crystallize, and these crystals increase by the addition of other small crystals to produce fairly sizable grains; on the other hand, where the hot oily material is chilled very rapidly, the grains are not permitted to form as such, but the tiny crystals of saturated glycerides are distributed evenly through the mass (Burchenal, Q1016, p. 157).

It is incorrect to say, therefore, that any of these products are "mixtureless", although they are all physically homogeneous as prepared for the market.

Petitioner's Product is a Mixture of Oil and Hard Fat.

Kream Krisp, Petitioner's product, consists of about 85 to 90% cottonseed oil, and about 10 to 15% hydrogenized cottonseed oil blended and mixed together as a result of the continuous process followed in its production. The analysis of a sample of cottonseed oil and of Exhibit 2—

Kream Krisp shows that the proportion of linolin has been reduced from 46% to 37.7%. More than four-fifths of the linolin has not been affected at all. The olein has been increased from 32.5% to 34.3%. Slightly over 2% of the olein has been changed. Thus only 8.3% of the oil is hydrogenized. The remainder of the oil, 91.7%, passing through the hydrogenating apparatus without being changed, so that the product consists of the large body of cottonseed oil which has been unchanged, plus solid glycerides synthetically produced *in situ* from linolin by the hydrogenation. On this point, Dr. Walker testified.

> "XQ124. Would it be correct to say, then, that in defendant's processes the cottonseed oil is caused to absorb a limited amount of hydrogen by reacting on the oil with hydrogen in the presence of a catalytic agent and at an elevated temperature? A. It would be more accurate to say that *a portion* of the cottonseed oil was made to react with hydrogen at an elevated temperature because, *of course, there is a relatively large portion of the oil which passes through the capsule and is not acted on by the hydrogen at all.*" (Walker, p. 329.)
>
> "XQ223. Do you think that there is any different kind of action so far as hydrogenation is concerned going on in the for the time being zone of the spray and the parts of the diaphragm outside of the zone? A. No; I rather think that the hydrogenation which takes place does so the moment that the oil strikes the surface of the nickel and uses up the hydrogen which is adsorbed on the nickel, or which is there in the form of the unstable hydrides and that the *oil which passes through after that goes through without reaction.*
>
> "XQ224. But that is merely a theory, is it not? A. That is a theory based on the *fact that we have so much oil in the resultant*

product which has not been affected by the hydrogen." (Walker, pp. 340-341.)

"XQ125. How do you know that fact? A. Because in the oil we have approximately 22 per cent. stearin which cannot be acted on by hydrogen; we have in the final product some 34 per cent. of linolin which has not been acted on by hydrogen. We have in the final product about 33 or 34 per cent. of olein which may not have been acted on by hydrogen at all. *So that the only percentage of the oil which has really been acted on by hydrogen is not more than* 14 *or* 15 *per cent.*" (Rec. p. 329.[1])

This testimony of Dr. Walker that Defendant's product consists of a *mixture* of the original oil together with that portion which has been hydrogenized to a solid fat, has not been contraverted or denied. Mr. Richter has testified that, when Defendant's product is slowly cooled, it invariably separates into two parts, one an oil and the other a solid, thus proving that it is a mixture (Richter, Qs. 216, 218, p. 379).

The evidence is that, even if Kream Krisp should not show cottonseed oil by the Halphen test, this is wholly inconclusive. When its capacity to respond to the test is destroyed by heat, it is still cottonseed oil (Richter, Qs. 35-38, p. 361). For example, crude cottonseed oil is red, because of coloring matter contained in it. In the refining process, to make it edible, the red coloring matter is removed by a caustic soda treatment. The pale yellow oil thus resulting is still cottonseed oil. So, in destroying the minute chromogenitic substances (which give the Hal-

1. In the patented product, by similiar reasoning about 32.5% of the oil has been acted on by hydrogen, while about 67.5% remains unaffected.

phen reaction) in cottonseed oil by heating it, the material is, nevertheless, cottonseed oil.

Moreover, Mr. Richter testified that with but a few exceptions, which he accounted for, even by the Halphen test Kream Krisp uniformly shows the presence of free cottonseed oil. The Halphen test is further discussed in the Appendix (p. 130).

The sum and substance of it all is that Kream Krisp is a mixture of cottonseed oil and hard fat, and is as much a mechanical mixture as is Jewel Compound.

Petitioner's Product is Substantially Identical with Prior Art Products.

In the final analysis, Kream Krisp, as a product, is substantially identical with the prior art "commercial mixtures" of cottonseed oil and oleo stearin. The only difference is the process of its production. That is to say, the solid fat is produced synthetically in Kream Krisp, and is extracted from beef tallow in the commercial mixtures. In each case, the proportion of solid glycerides in the original cottonseed oil has been increased to a point where the oil has been hardened to a semi-solid consistency. Mr. Morrison's testimony may be recalled as follows:

> "RDQ124. In producing a substance of corresponding consistency by partial hydrogenation and by mixing as in the making of the compound, which adds the greater percentage of solid fats? A. In the final analysis they are practically the same. In the compounds we add a given amount to the oil, whereas in the hydrogenated products like 'Kream Krisp' * * * we increase the solids at the expense of the liquid. So that in the ultimate analysis, however, the

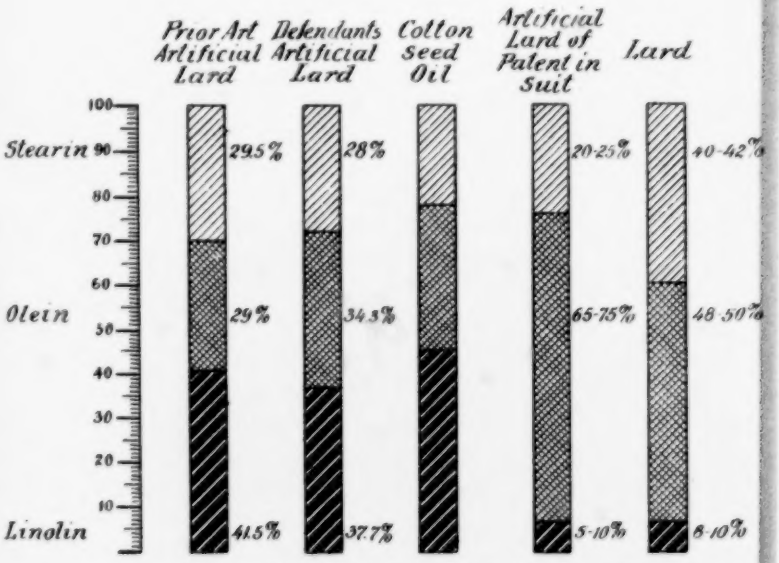
ratio between the solids and the liquids is pretty nearly the same.

"RDQ125. But when it is done by the hydrogenating process, does the process increase the percentage of saturated fats to the same extent that they are increased by the addition of them in making the compound? A. Possibly not quite, but it is very close to the same figures." (Morrison, pp. 495-496.)

There is this further difference, however, to which reference has been made, that, in subjecting the oils to the *batch* process recited in the patent in suit, the percentage of linolin in the final product has been decreased to 5%-10%, and the percentage of olein has been increased to 65-75%; whereas, in Kream Krisp and in the prior art "commercial mixtures" or artificial lards, the percentage of linolin is 37.7% and 41.5% respectively, and the percentage of olein is 34.3% and 29% respectively. The saturated fats are 28% and 29.5% respectively, whereas in the patented product, they are 20% to 25%. On the opposite page, there is graphically shown the identity of Kream Krisp with prior art products and its dissimilarity from lard and the product of the patent.

There is no evidence to support the proposition or contention of the Court of Appeals that Kream Krisp—the Petitioner's product—is chemically homogeneous or, in other words, that it does not consist of a mixture of cottonseed oil and hydrogenized oil. The evidence affirmatively shows that Defendant's product is first a mixture of chemically different glycerides, *i.e.*, solid and liquid glycerides, and, second, is actually a mixture of approximately 85-90% free cottonseed oil and 10-15% hard hydrogenized oil.

Proportions in which the solid and liquid glycerides are in admixture in the various products.



"It is, therefore, my object in the preparation of my new lard-like composition and food-product * * * to obtain a product with a high percentage of olein, a low percentage of linolin and the lesser-saturated fats, and with only sufficient stearin to make the product congeal at ordinary temperatures" (Patent in suit, lines 65-74).

The above chart shows that the patented product, like lard, is high in olein and low in linolin; whereas Kream Krisp and prior art artificial lard are high in linolin and low in olein.

Thus, the patented product is "lard-like," while Kream Krisp is not like lard but is like prior art artificial lard.

An Analogy.

Sodium hydrate crystals may be thrown into water (in which they are freely soluble) and, when so added, a mixture of sodium hydrate and water is produced, in the form of a solution. That is one *way* of making a mixture.

So also a piece of metallic sodium may be thrown into water (with which it spontaneously combines chemically to form sodium hydrate) and when so added a mixture of sodium hydrate and water is likewise produced, in the form of a solution. That is another *way* of making the mixture.

The solution obtained by adding the metallic sodium to the water is none the less a mixture (*i.e.*, a mixture of sodium hydrate with water) because produced by treating the water with metallic sodium—and thereby converting a part of the water chemically into sodium hydrate, which thereupon goes into solution—than is a like mixture produced by throwing sodium hydrate crystals into water. Although produced by different procedures, the final product is the same.

To say, in the one case, that the water is partially "sodiumized" because the sodium has acted chemically upon the water, establishes no rational distinction, since the final products of both procedures are mixtures. The final product is the thing to be considered, and it is a "mixture" (and not "mixtureless") although obtained by the chemical action of the metallic sodium upon the water, instead of the physical admixture of sodium hydrate crystals therewith.

Again, if 100 gallons of oleic acid are gradually hydrogenized until half of the oleic acid is converted to stearic acid, the result is a mixture of 50 gallons of unconverted oleic acid and 50 gallons of stearic acid. This product may be a semi-solid, and may be characterized as "incompletely hydrogenized" oleic acid. It is none the less a mixture, and is not different from a product obtained by adding together 50 gallons of oleic acid and 50 gallons of stearic acid. To attempt to differentiate between them as products on the ground that one is "mixtureless" and the other is not, is absolutely absurd. It is equally absurd to say that Kream Krisp is "mixtureless."

Claims Construed in Light of Specification are not Infringed.

It is submitted that the Court of Appeals clearly erred in holding Petitioner's product to be the product of the patent in suit. The patentee has set the boundaries of his invention and has taken much latitude in so doing. He is supposed to have gone to the extreme—to have exercised his privilege to the full. Whatever characteristics may exist, he is bound by those he gives. What was said by the Court of Appeals for the Second Circuit in *Matheson vs. Campbell*, 78 Fed., 910-917, is here particularly apt and is repeated.

> "Now, there are many tests that may be applied to two bodies which are being compared in order to determine whether they are or are not identical. The number of these tests may be multiplied indefinitely, for the skill, the experience, the scientific ingenuity of the chemist, will ever devise new ones in the future, as they have the old ones in the past. Some of these tests will be of great

significance; some, almost crucial; others will be of but minor importance. Their relative value, no doubt, may change as science goes sweeping on from point to point; but it must be sound law, as it is reasonable common sense, to hold that the tests of prime importance in a suit for infringement are those which the patent itself prescribes. The inventor certainly may be assumed to know what it is that he has invented. If any one is able to describe the product of his inventive skill, it is himself. He surely knows the earmarks of the thing he seeks to patent, and when, out of the multitudinous qualities which his product may exhibit under varying conditions and in different relations, he has selected and set forth in his patent a chosen few, surely these should be accepted as the distinguishing earmarks—the characteristic stigmata of the product his patent is to cover. It may be that, after it is found that the body under investigation responds to all the tests of a patent, science may yet be able to demonstrate by other tests that, nevertheless, it is not the new product therein patented; that the patentee had selected identifying tests broader than he was entitled to, and which would cover products not within the range of his discovery. But, when the body under investigation fails to respond to the specific tests the patentee has himself selected, he certainly cannot fairly insist that it is identical with his product."

Placed in parallel colums, the identifying characteristices or stigmata of the patented article as fixed by the patentee himself, and of the defendant's article, show grave discrepancies. There is no evidence that these discrepancies are immaterial. Indeed, the patentee cannot be heard to deny their materiality.

	Burchenal's product.	Defendant's product.
Iodine value	55 to 80	94.7 to 83.8
Melting Point	33°C. to 40°C.	33.9°C. to 46.6°C.
Titer	35°C. to 42°C.	33.4°C. to 36.5°C.
Saponification value	195	194.5
% Saturated fats	20 to 25	28.
% Olein	65 to 75	34.3
% Linolin	5 to 10	37.7
% added hydrogen	1.5 to 2.5	.875
Shows cottonseed oil by Halphen test	No.	Yes.
"Lardlike"	Yes.	No.
Liability to grow rancid like commercial mixtures	No.	Yes.

From the foregoing tabulation, it will be noted that the discrepancies are to every reliable characteristic or test.

Petitioner's product has substantially all the stigmata and characteristics of the prior "commercial mixtures" or artificial lards. In its proportions of the several glycerides, its iodine value, its responsiveness to the Halphen test, its melting point, its liability to become rancid—it is one with said prior art products. Substantially the only difference is that of the *process* by which Kream Krisp and the prior art products have been produced.

This is shown by the following table in which the sample of Kream Krisp introduced in evidence is compared with Flake White:

	Flake White.	Kream Krisp.
Iodine value [1]	95.	94.7
Melting point [1]	42.° C.	35.7° C.
Titer [1]	36.° C.	33.85°C.
Saponification value [1]	195.	194.5
% saturated fats [2]	30.	28.
% olein [2]	28.	34.3
% linolin [2]	42.	37.7
Shows cottonseed oil by Halphen test	Yes.	Yes.
Liability to grow rancid [3]	Same.	Same.
% cottonseed oil	85.	85-90
% added solid fats	15.	10-15

Jewel Compound—Swift and Company's prior art artificial lard—likewise in the proportions of its component glycerides, is substantially identical with Kream Krisp.

	Jewel.	Kream Krisp.
% saturated fats	29.9	28.
% olein	29.	34.3
% linolin	41.5	37.7

They have the same characteristics as to liability to grow rancid (Bacon, RDQs. 363-365, p. 449).

In the products such as Jewel Compound, the hard fat (solid glycerides extracted from beef fatty tissues), is added to the cottonseed oil to give it the desired semi-solid consistency.

In the prior art product, Flake White, a portion of the cottonseed oil was first hydrogenized to a hard fat, and then mixed with the main body of the cottonseed oil to give it the desired semi-solidity.

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1. Flake White as described in Patent No. 1,135,935, Rec. p. 582, lines 39-49.
2. Morrison, Q.177 p. 215.
3. Bacon, RDQ. 363-365, p. 449.

In Kream Krisp, in passing through the hydrogenating apparatus, a portion of the cottonseed oil is hydrogenized to a hard fat, and *is thus mechanically* mixed with the remaining unhydrogenized oil to harden it to a semi-solid consistency.

To the same extent which the prior art artificial lard differs from the patented product, Kream Krisp differs therefrom, because it is substantially identical with the said prior art products.

The record in this case presents the following situation:

1. The Petitioner's product, Kream Krisp, cannot be produced by the batch process as described in the patent in suit; and the patented product as described in the patent cannot be produced by Petitioner's process (Richter, Qs. 219-221, Rec., p. 379).

2. The petitioner's product is not what the patentee has described, and what he stated in his patent was his object to produce, namely:

> "* * * to obtain a product with a high percentage of olein, a low percentage of linolin and the lesser-saturated fats * * * *."

3. The Petitioner's product does not respond to any of the reliable identifying tests specified in the patent as characterizing the patented product.

4. The Petitioner's product does not more closely "resemble lard than do the commercial mixtures of cottonseed oil and animal oleo stearin." On the contrary, it is substantially identical with the prior art products.

It is manifest, we submit, that on this state

of facts, the Court of Appeals was clearly in error in holding Petitioner's product to infringe the patent and in reversing the decision of Judge Hand in the District Court who found and held that:

> " * * * Kream Krisp instead of being low in linolin is extremely high, and that instead of being high in olein as specified in the Burchenal patent, it has a percentage of olein which differs but little from that existing in refined cottonseed oil unhydrogenated. In fact, Kream Krisp seems to present many of the objections referred to in Burchenal's specification and to lack the very things upon which the latter based his right to receive a patent." (Rec., p. 765.)

and further that:

> "under any fair interpretation of the patent there is no infringement." (Rec., p. 764.)

It is submitted that the mandate of the Court of Appeals, in respect of infringement, should be reversed.

Petitioner's Advertising Circulars.

It was urged on the Courts below by the Respondent that the advertising circulars of the Petitioner, reprinted on pages 505 to 523 of the record, are evidence of infringement. Of course, these circulars betray the exuberant opinion of the non-technical advertising agent of the merits of Petitioner's product, Kream Krisp, but they are immaterial from any point of view. In the last analysis, the circulars refer to a product, which has herein been shown not to be the material which the patentee sought to patent, and not one "with a high percentage of olein, a low percentage of linolin and lesser-saturated fats,

and with only sufficient stearin to make the product congeal at ordinary temperatures." On the contrary, the proofs show that Kream Krisp is substantially identical with the prior art products, any statements in the advertising matter to the contrary notwithstanding.

To find infringement or noninfringement of a patent, based, not on a comparison of the alleged infringing product itself with the patented product and not on the testimony of competent experts, but on extravagant claims of superiority in advertising matter, would set up a wholly new and illogical method of determining the question.

The opinion of the advertising agent, that:

> "Kream Krisp contains nothing which oxidizes readily, hence it resists oxidation far better than lard, butter or any other cooking fat now in use."

that:

> "Kream Krisp * * * contains no oil itself. The oil is completely changed by hydrogenation under the influence of heat to a butterlike substance."

that:

> "It contains no hard fats." etc. etc.

has been shown by the Petitioner to be incorrect in point of fact. (Bacon, RDQs. 363-366, p. 449; Richter, Q216, p. 379; Walker, XQs. 124, 125, p. 329.)

The high smoking point of Kream Krisp is due to its treatment with superheated steam in the usual deodorizing process (Richardson, Qs. 37-43, pp. 348, 349).

In general, the advertising agent was comparing Kream Krisp with butter, and described it not so much as a lardlike, but as a *butterlike* sub-

stance. The specific facts, as established by the evidence of competent witnesses on the record, are that Kream Krisp is substantially identical with prior art products—though the special apparatus and the special process for producing it are controlled by the Petitioner under Moore's patents, notwithstanding the extravagant and incorrect statements of the advertising agent (Rec., pp. 681-702; Walker, Q65, p. 323).

The Patent and its History in the Patent Office.

We have printed in the appendix (page 136) in parallel columns, the specification of the patent as filed and the specification of the patent as amended and issued.

In the original specification the applicant, after defining his invention as a food product, in the words already quoted in this brief, proceeded immediately to a description of the method of making it, describing briefly the ordinary process of hydrogenation and adding:

> "According to the present invention, th amount of hydrogen absorbed is carefully regulated and limited. In practice, the operation is stopped when the oil has been converted into a product having a melting point ranging from 36°C to 43°C, preferably 41-42°."

The remainder of the brief specification is taken up with a description of the physical properties of the product. No further instructions are given, nor were any necessary, because the art knew how to regulate and limit the absorption of hydrogen, and how to stop the process when the oil had been converted into a product having the specific melting point.

The first claim was for a semi-solid food product consisting of incompletely hydrogenized vegetable oil having a melting point ranging from 36° to 43°C, and the second claim added to this an identification of the product by reference to its saponification value, its iodine value, and to the fact that it gave no reaction for cottonseed oil under the Halphen test, which were all tests well known to the chemist for identifying lard and artificial lard products.

The patent as amended and issued differs substantially from the original specification. After the original first paragraph there is inserted a statement of the special object of the invention. This statement is that in the product of the patent those components of the vegetable oil which are alleged to be inferior and detrimental to use as a food product (meaning linolin) are to a large extent converted into a higher form (olein). The presence of the linolin is alleged to affect the rancidity of the material. This is said to be avoided by converting the linolin into olein. It is pointed out that the purpose of the stearin is to give the product the desired semi-solid consistency and to retain the shortening equally distributed throughout the food, in which it is used; and that an excess of stearin beyond that required for this purpose is detrimental because the stearin does not melt at the temperature of the human body and is consequently not easily digestible. This insertion concludes:

> "It is, therefore, my object in the preparation of my new lard-like composition and food product, and in preparing same from cottonseed oil, to change the chemical composition of the oil to obtain a product with a high percentage of olein, a low percentage of linolin and lesser saturated fats, and with

only sufficient stearin to make the product congeal at ordinary temperatures."

Then follows the original statement of the process of hydrogenation. The old statement that in practice the operation is stopped when the oil has been converted into a product having a melting point ranging from 36° to 43°C., preferably 41-42°C., is changed to read:

> "In practice the operation is stopped when the oil has been converted into a product which cools to a white or yellowish semi-solid, more closely resembling lard than do the commercial mixtures of cottonseed oil and animal oleostearin."

There is then added a statement that in many respects the product is superior to the best leaf-lard as a shortening, because it is not so liable to become rancid and can be heated to a considerably higher temperature than lard without smoking or burning—which statements, however we have shown by competent evidence not to be true. (Bacon RDQ363-365, p. 449; Richardson, Q37-43, pp. 348, 349).

The identifying physical tests are modified to change the original statement of the melting point and the titer.

There is then added the statement that the product contains from 20 to 25% stearin, from 5 to 10% linolin and from 65 to 75% olein, and the repetition of the statement of the special object of the invention—a sort of Q. E. D.:

> "It will thus be seen that I have produced an ideal food product, which is high in olein, low in linolin and lesser saturated fats, and with only enough stearin to make the product congeal at ordinary temperatures."

The claims were entirely redrawn, claims 1 and 2 being in the form heretofore quoted, and the

other claims identifying the product by the several identifying tests, and by the relative proportions of linolin, olein and stearin.

Whatever may be said about the respective attitudes of the Examiner and the applicant during prosecution, it is clear that the applicant deliberately represented that the novelty of his product resided in its *chemical* characteristics which have been shown to be like those of lard and particularly in the characteristic that, like lard, it was low in linolin and high in olein, with a sufficient quantity of stearin to make it semi-solid at ordinary temperatures. On this representation the patent was granted.

The limitation is clearly imported into claims 1 and 2 by the expression "lard-like" which was used to mean *chemically* lard-like in the relative constituents of linolin and olein.

We submit that there is no equitable or legal reason which could justify the respondent's attempt now to avoid those limitations, and to give the claims a much broader scope on the theory that the novelty of the *product* can be established by reference to the *process* by which it is made.

Particularly is this improper when it appears that the specific process used by the petitioner is very different from the respondent's process and does not result in a product chemically like lard (low in linolin and high in olein), but results in a product which has substantially the proportions of linolin and olein present in the prior art artificial lard or "commercial mixtures."

This view of the case was properly, we submit, entertained by the District Court, for in his opinion, Judge Hand said, in part

> "Furthermore under any fair interpretation of the patent there is no infringment.

"The file wrapper indicates that the Examiner rejected the claims as originally filed, saying:

"'* * * if the problem of simulating lard from cottonseed oil were presented to an oil chemist, an incomplete hydrogenation of cottonseed oil would at once suggest itself to him, as a solution of the problem. All the claims are rejected accordingly on the * * * ground of lack of invention.'

"Thereafter new claims were rejected upon the Kayser patents for the reason that his process could be arrested at any time to produce an incompletely hydrogenized product. Then and for the first time Burchenal filed an amendment setting forth certain percentages of linolin, olein and stearin which his product should contain. It seems quite evident, therefore, that claims 1 and 2 of his patent would under such circumstances, if valid at all, be limited to substantially the chemical composition described in the amended specification.

* * * * * *

"Claims 1 and 2 should consequently be construed in the light of the proceedings of Burchenal before the Patent Office and not given a scope which would monopolize an art in which Normann, Kayser and others had been the real pioneers."

In this ruling the District Court was following the established doctrine set forth by this Court, that when an applicant for patent to escape rejection, inserts limitations in his specification defining his alleged improvement, his claim shall not be construed as though no such amendment had taken place, but on the contrary must be construed in the light of the amendment.

Roemer v. Peddie (132, U. S., 313, 317).
Snow v. Lake Shore & Railway Co. (121 U. S. 617, 629, 630).

The District Court after pointing out that Kream Krisp has a chemical composition "extremely remote from that described in the specification of Burchenal," says

> "In fact Kream Krisp seems to present many of the objections referred to in Burchenal's specification and to lack the very things on which the latter based his right to receive a patent. Indeed the composition is much closer to the lard compound Jewel made out of stearin and cottonseed oil than to Crisco. * * * claims 1 and 2 if properly construed are not infringed by the defendant."

The Court of Appeals, however, disregarded the axiomatic rule laid down by this Court in the decisions herein referred to, that

> "When a patentee on the rejection of his application inserts in his specification in consequence limitations and restrictions for the purpose of obtaining his patent, he cannot after he has obtained it, claim that it shall be construed as it would have been construed if such limitations and restrictions were not contained in it." (*Roemer v. Peddie,* 132 U. S., 313, 317).

and held that

> "In our opinion never at any time did the applicant acquiesce in the Examiner's action, but consistently endeavored to obtain and finally did obtain in the claims first above quoted, what he had in the first place asked for."

In this statement, the Court of Appeals lost sight of the "limitations and restrictions" which Burchenal was forced to insert in his specification to secure the allowance of his patent, viz., that his product was one, *like lard,* high in olein and low in linolin, and disregards the incorpora-

tion in the claims of the word "lard-like" as thus defined.

In fact, the Court of Appeals, having apparently arrived at a decision that "what is practically lard," is patentable, because produced by a particular process, (therein making its first fundamental error at law), and that defendant's product is "what a plain man would call lard," evidently determined that such matters as limitations imposed in the specification and claims, (notwithstanding such limitations excluded products like Petitioner's), should not stand in the way of its holding Petitioner's product to be an infringement.

We respectfully submit, that the opinion of the District Court clearly follows the rule laid down by this Court, and that it should be reaffirmed in this case.

There is no inequity in strictly following the rule laid down in *Roemer v. Peddie, supra*, for Burchenal confessedly did not even invent the very process described in his patent (Qs. 756-758, p. 68) as has been shown. He admitted that he does not even now know what is necessary to produce a product having a high olein content and a low linolin content.

> "Q856. In the production of a partially hydrogenized cottonseed oil, what factors are necessary to insure in the product a high olein content and a low linolin content? A. I can't tell you.
>
> "Q857. You mean that you don't know? A. I don't know.
>
> "Q858. And never did know? A. Never did know" (Rec. p. 78).

He did not ascertain by his own efforts the

chemical or physical properties of the product described in the specification and does not know who made the determinations establishing them (Qs. 723-724, p. 65; Qs. 823-827, p. 73; Qs. 828-831, p. 74; Q844, p. 75). Burchenal contributed nothing new. The most that could be argued in his favor in the patent office proceedings was, that

> "Applicant appears to be the first to determine and set forth the advantages and properties of a fractionally hydrogenized product, and his claims do not even cover such product broadly, but are limited to a product having a definite degree of partial hydrogenation" (p. 541).

though as we have shown, Burchenal did not even do this. But in any event, the ascertainment that the "fractionally hydrogenated" product is artificial lard, or is substantially like lard in its physical and chemical characteristics, is not invention. It was known that cottonseed oil could be hardened by the addition of solid fats to produce artificial lard, and it was known that cottonseed oil could be hardened by hydrogenation to add solid fats thereto. The use of either process was open to the public.

The ascertainment that a substance found or discovered by a prospector in a desert is asphalt, and has the advantages and properties of asphalt, does not constitute such asphalt a *patentable* invention or discovery.

As said by Judge Ward in his dissenting opinion (and, properly, we submit):

> "It was also known that the process would not affect the edibility of the product. The product at all stages of the process was therefore old and open to the public for any use of which it was capable. (Rec. p. 779).

The history of the Patent Office proceedings shows

(a) that the patent was improvidently issued for an unpatentable product, and

(b) that even as issued it is restricted by the imposed limitations and restrictions to a product having a chemical composition not present in Petitioner's product.

CONCLUSION.

In the foregoing pages, we have endeavored to make clear the lack of merit of the present suit considered from any standpoint whatever.

The material or product of the patent is lard. In the manufacture of lard artificially, it was always the practice to employ a fat consisting of an oil *hardened* to an appropriate semi-solidity. Given this semi-solid fat, the conversion to artificial lard is made by the well known steps of chilling or refrigerating, whipping or beating, and aerating. A homogeneous lardlike food product, consisting of incompletely hardened cottonseed oil, was therefore no new product. The incomplete hardening by the addition of hard fat, either chemically or mechanically, accomplished the same end, in obtaining the desired semi-solidity. The hardening of an oil may be accomplished progressively by the gradual addition of hard fat, until the product is a hard solid, and the addition of the hard fat may be arrested when the product has reached the desired consistency or semi-solidity.

For purposes of comparison, we place in parallel columns the second claim of the patent and a claim which describes the prior art artificial lard, to show that the patent claim rests solely on a statement of process.

Burchenal.	Prior Art.
A homogeneous lard-like food product consisting of an incompletely *hydrogenized* cottonseed oil.	A homogeneous lard-like food product consisting of an incompletely *hardened* cottonseed oil.

These two products thus described are, broadly speaking, the same.

The patent claim thus describes broadly no new thing but describes the particular process by which it is produced. Furthermore, if by the term "incompletely hydrogenized," the product is defined in the patent claim as capable of adding on more hydrogen, or of being further hydrogenized, it is not thereby distinguished from prior art lard or artificial lard, because both are "incompletely hydrogenized" in the sense that they can both be completely hydrogenized into a hard solid.

We have quoted the evidence which establishes the facts that have been herein set forth. And yet the Respondent, in its brief in opposition to the petition for certiorari, assumed to assert, contrary to the facts, that the product of the patent is

> "a chemical compound, not a mixture at all" (page 4)
>
> "the *chemical* product of the patent in suit" (page 7)

and to insinuate, that the patented product is a single definite chemical compound, is thus distinguished from the prior art artificial lard, because in the latter

> "the two substances in admixture *do not merge into each other chemically* so as to modify either of them to any degree whatsoever."

The bold assertion that the patented product is a "chemical compound, not a mixture at all"

is denied by the patent in suit, which describes the proportions in which the three chemically distinct glycerides—stearin, olein and linolin—are present, and are in admixture in the product.

That assertion is denied by the Respondents own expert chemists, Dr. Baskerville and Mr. Morrison. (Baskerville, Q11, p. 265; XQ38-40, pp. 267, 268; Q120, 121, 123, 124, p. 464; Q242-255, pp. 480, 481; Morrison, RDQ123-128, pp. 495, 496).

It is denied by every expert chemist who testified in the case.

Likewise, the assertion that in the "incompletely hydrogenized" product, there is no cottonseed oil, is absolutely opposed to the facts,

> " * * *because there is a *relatively large portion of the oil* which passes through the capsule, and *is not* acted on by the hydrogen at all."
>
> "So that the *only* percentage of the oil (in Petitioner's product) which has really been acted on by hydrogen *is not more than 14 or 15 per cent.*"
>
> "XQ126. Excepting in percentages, the same would be true as to the batch method I suppose. A. The same general statement would hold for that method, yes, other than the percentages named (Walker, XQ124-126, p. 329)."

In making its unwarranted statement that there is no cottonseed oil present in the patented product, Respondent relies on that broken reed, the Halphen test.

We have shown the fact to be, however, that the Halphen test is not a criterion or conclusive test of the presence or absence of cottonseed oil. In "Chemical Technology of Oils, Fats and Waxes, Vol. II, p. 204, 5th Ed., Dr. Lewkowitsche says:

> "It should be further noted that failure to

> obtain the color in the Halphen test does not prove the absence of cottonseed oil."

Respondent's own expert, Dr. Baskerville, concedes that

> "the Halphen test* * *is not absolutely final" (Q251, p. 480).

He states that when in the commercial treatment of oil, it is heated to a high temperature, it loses its capacity to respond to the Halphen test (XQ81, 82, p. 272).

Petitioner's chemist, Mr. Richter, confirms Dr. Baskerville in this (Q35, 36, p. 361) and says further that notwithstanding its failure to respond to the Halphen test, the oil, nevertheless, is cottonseed oil, as is apparent from the quotation from Lewkowitsch.

All this is corroborative of Dr. Walker's testimony hereinbefore quoted to the effect that the "incompletely hydrogenized" product consists of a mixture of cottonseed oil, and the hard fats added therein, in situ, by hydrogenizing a portion of the oil. (Walker, XQ124-126, p. 329; Morrison, RDQ123-128, pp. 495, 496).

Respondent's brief asserted that the patented product differs from

> (1) "unconverted cottonseed oil—a liquid."
>
> (2) "completely converted cottonseed oil—a hard product."

We reply, so do the prior art products.

Respondent's brief asserted that the patented product differs from a mixture of (1) and (2), namely (3), a mixture of 85% to 90% of cottonseed oil and 10% to 15% of hard hydrogenized oil, because the patented product is "homogeneous" and because it is produced by "incompletely hydrogenizing" the oil.

We have shown by the testimony of Respondent's expert, Dr. Baskerville, that the patented product is not "chemically" homogeneous (Baskerville, XQ38-40, pp. 267, 268).

We have shown by the testimony of the patentee himself, that the product is *physically* homogeneous for the same reason that Jewel Compound and the mixture (3) is physically homogeneous, namely, its rapid chilling on refrigerated lard rolls and the incorporation of air therein by the pickers (Burchenal 488-495, pp. 44, 45).

No expert in the case, including Respondent's experts, has denied that in the "incompletely hydrogenized" product, and in prior art artificial lard, hard or solid fats are added to and mixed with the oil, and that

> "in the ultimate analysis,* * *the ratio between the solids and the liquids is pretty nearly the same" (Morrison, XQ124, p. 495)."

The assertions of Respondent's brief, that the "incompletely hydrogenated" product is a "synthetic single material" and that it contains no "free cottonseed oil embodying the germs of rancidity," are thus wholly untrue and unwarranted by the facts. "Crisco" turns rancid, the same as

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Respondent's counsel, on examining his witness Morrison, emphasized that the results are the same, as follows:

> "RDQ126. In making of Crisco (incompletely hydrogenized product), what do you figure to be *the addition* of the *solid fats* by hydrogenation. A. As I have not figured it here, *from the figures given in the Burchenal patent*, and so forth, from 5 to 8 percent.
>
> "RDQ127. And in the making of the compounds, how much of the solid fat is added to the cottonseed oil? A.—Why I testified if it were a very hard fat, * * * it would be somewhere in the neighborhood of 7½ or 8 percent."

lard. "Kream Krisp" turns rancid the same as Jewel Compound (Bacon, RDQ363-365, p. 449).

One is therefore inevitably forced by the facts to the conclusion that the product of the patent in suit is an old and unpatentable product. Like the prior art artificial lard, it is a semi-solid product of the consistency of lard, produced by hardening cottonseed oil by the addition of solid fats. The patentee has not even the merit of being the inventor of the particular process—i. e. the batch process of hydrogenation—by which the solid fats are added to the cottonseed oil.

Hence, when the Court of Appeals stated that from the *standpoint of the patent law,* the patented product, though the difference between that product and the prior art artificial lard is unimportant from the standpoint of chemist or cook—is patentable, it erred in its understanding of the law as established by this Court. The patent law as interpreted by this Court, is that any product which is old is unpatentable, and that patentability is not imparted thereto because it is produced by any particular process.

And thus in conclusion, it is respectfully submitted that for the reasons herein stated, and on the facts and the law as presented in this case, the mandate of the Court of Appeals should be reversed, on the ground that the patent in suit is invalid, and that in any event it is not infringed.

Respectfully submitted,
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MELVILLE CHURCH.
Of Counsel for Petitioner.

New York, N. Y., March 8, 1920.